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ABSTRACT

The Formative Evaluation and Heuristic Research (FEHR) PRACTICUM, a computerized game, gives practical experience in such program evaluation tasks as problem definition, operationalizing objectives, field study, budgeting, proposal writing, data analysis, and interpretation--without the expense and time commitments required by most research. The players, graduate students or practicing professionals, design and conduct an experiment comparing the effectiveness of available educational programs on students in a mythical school district. As a "research assistant," the computer can identify individuals or groups of students by category (test score, grade, sex), apply educational programs, and administer and score tests which determine the effects of a program over time. There is no predetermined decision; rather, the results of each team are critically evaluated and methodological implications are discussed. The available simulations study preschool to college level populations; this document describes empirical evaluations of perceptual handicap remediation, remedial arithmetic, and extended school year programs. Each problem has an Information Bank, which is a simulated library that helps players to define their experiment by examining real-life research. Each bank is divided into four sections: (1) abstracts of articles directly related to the problem, (2) abstracts of auxiliary references, (3) descriptive and normative data on each of the standardized tests available in the program, and (4) test critiques. (CP)

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INFORMATION BANK FOR PERCEPTUAL HANDICAPS

These materials are meant to be used as abstracts or summaries, highlighting the major points of the articles or presenting only the most relevant normative information. They should be referred to in the same manner as one would refer to a journal such as Psychological Abstracts. More complete information on these sources, or sources not included here, may be found in your library.

This information bank is divided into four sections, as follows: (1) References directly related to this problem; (2) Auxiliary References; (3) Descriptive and normative data about variables; and (4) Test critiques, validation studies, etc.

Barbe, Walter B. "Perceptually Handicapped." In The Exceptional Child. Washington, D.C.: The Center for Applied Research in Education, Inc., 1963, 78-85.

A great deal of discussion has taken place concerning the labels applied to the various categories of exceptional children. One of the newest is that of "perceptually handicapped," a label usually applied to children who exhibit the Strauss Syndrome, i.e., brain-injured children displaying the perceptual and conceptual difficulties described by Strauss (cf. Strauss and Lehtinen, Psychopathology and Education of the Brain-Injured Child.)

Strauss groups the characteristics of brain-injured children into three categories: perception and perceptual disturbances, thinking disorders, and behavior disorders. He describes perception as "an activity of the mind... between sensation and thought," a "means by which the individual organizes and comes to understand the phenomena which constantly descend upon him (Strauss and Lehtinen, 1947). The Strauss syndrome child does not perceive a picture as a whole, each part identified in relationship to it. Rather, he perceives the individual parts separate from the whole. He also has great difficulty separating foreground and background in visual perception. Strauss showed that perception difficulties exist in the visual, tactile, and auditory fields. Perseveration, the inability to shift, is the consistent repetition of continuance of an activity once begun. In thinking disorders, it has been found by numerous research studies that the brain-injured child is inclined to give bizarre responses. He is distracted more easily by unessential and accidental details. The child with the Strauss syndrome is inclined to want things in an exact, never-changing order--Strauss refers to this as a "formulistic" arrangement. Behavior disorders in the Strauss syndrome include such things as short attention span, high degree of distractibility, and emotional shallowness. The child's uncontrollable drive and disinhibition are perhaps the outstanding characteristics which cause behavior problems in school.

It is important that educators and psychologists be aware of the fact that the child being described is not necessarily mentally retarded. It is true that he manifests many of the characteristics of the retarded; particularly, he does not make normal progress in academic school subjects when taught by regular methods.

Strauss found the brain-injured child who was not mentally defective characteristically to have great learning difficulties in school, in spite of proven normal intelligence (Strauss and Kephart, 1955). On such tests the normal brain-injured or Strauss syndrome child scores higher in the verbal area than in the nonverbal. Particular strengths seem to be in vocabulary or word meaning with decided deficiency in verbal reasoning areas. Eye-hand coordination activities are usually failed as are perception of items involving figure-ground tasks.

For a number of reasons, many children with brain injury are not identified until they enter school. What has until that time been labelled a behavioral problem soon becomes a severe learning problem. The school's

Barbe, Walter B. (continued)

responsibility in making a referral to the family physician is to describe those behavior patterns and the nature of the child's learning difficulties as clearly as possible. It will probably be the responsibility of the family doctor to refer the child for a neurological examination. If a school psychologist is available, preliminary referral to him will add additional evidence to support the teacher's observations.

The brain-injured child needs to have extraneous stimuli removed. A rather rigid pattern of instruction is strongly recommended, with as little change in the routine as possible. It is possible that the Strauss syndrome child could be educated along with the mentally retarded, but it is this author's opinion that the best instruction for both groups of children is not likely to be achieved in an integrated classroom.

Whenever possible, the child should be provided for in the regular public school, and for the first three grades preferably in special classes. From the fourth grade on the child who is mentally retarded should be directed to the mentally retarded class. The child with normal intelligence might be fitted into the regular classroom. There is an increasing number of school systems recognizing this problem and making special provisions for these otherwise extremely difficult-to-handle children.

Bateman, Barbara. "Learning Disabilities: Yesterday, Today and Tomorrow." In Educating Children with Learning Disabilities, Edward C. Frierson and Walter B. Buble (eds.). New York: Appleton-Century Croft, 1967.

The child with learning disabilities is perhaps best described as one who manifests an educationally significant discrepancy between his opponent capacity for language behavior and his actual level of language functioning. Major areas:

1. Dyslexia, reading disability (5 to 10 percent have this problem).
2. Verbal communication disorders (difficulty with comprehension or expression of spoken language).
3. Visual-motor integration problem, conceptual.

Bryan, Quentin, R. (Unified School District, Inglewood, California). "Relative Importance of Intelligence and Visual Perception in Predicting Reading Achievement." California Journal of Educational Research, 15(1), 1964, 44-48.

Kindergarten children of 1st, 2nd and 3rd grades were tested over a four-month period by means of the Kuhlmman-Anderson Intelligence Test, the Metropolitan Reading Readiness Test, the California Achievement Test, and the Frostig Developmental Test of Visual Perception. Correlational analysis of the results (KA IQ, not ka Ma), led to the conclusion: "Visual perception appears to have relatively more weight than intelligence and reading readiness in predicting reading success in the first grade." With progression up to the fourth grade, intelligence assumes increasingly the dominant role.

T.E. Newland

Coleman, H.M. "An Analysis of the Visual Status of an Entire School Population." Journal of the American Optometric Association, April 1970, Vol. 41, No. 4.

"A study of 3623 children, grades K-6, was conducted in a public school setting to determine incidence of vision problems, sex distribution of children with defective vision, type of visual deficit and changes in refractive error with age, referral distribution and accuracy between the two eye-care professions (optometry and ophthamology), and an early study of possible repetition. The incidence of vision problems in total school populations is found to be increasing at a faster pace than previously studied.

Conclusions and Recommendations:

1. The incidence of refractive error in a total school population is apparently increasing, and at a faster pace than indicated in previous studies.

2. Little or no myopia is to be found in kindergarten or grade 1.

3. Myopia begins to appear in grade 2, shows a radical upsurge in grade 3, and by grade 4 is a major problem.

4. By grade 6, better than one out of three girls was myopic and one out of four boys exhibited myopia.

5. It is highly possible that even with a good evaluation program by professional eye-care practitioners only 60% of the parents seek the professional attention recommended.

6. Accuracy of referrals is dependent upon criteria and standards of correction, type of refractive error, and specific referral discipline.

7. Myopia is well diagnosed by administered tests and seems to have littl or no relationship to grade repetition. It has been observed that myopic children are often excellent in reading skills.

8. Hyperopia plays a significant role in grade repetition along with astigmatism found in males. This relationship coupled with the lack of adequate identification strongly indicates the need for research.

9. In general, it is highly probable that a significant number of children are suffering from visual problems, often undetected or diagnosed at a later time than desired. There is a possibility that the educational process itself induces a change in refractive response of the organism in its attempt to achieve homeostasis.

Coleman, Howard. "The Child with Visual-Perceptual-Motor Dysfunctions," Children's Perceptual Achievement Center. Rumford, Rhode Island.

The child with visual-perceptual-motor dysfunction lives in a world of confusion and disorganization. A bewildering mass of stimuli, lacking in order, sequence, pattern, and prior experiential guidelines bombard him with incomplete and inaccurate information. His intelligence is "normal," and yet he does poorly in school.

He seems clumsy and awkward and frequently bruises himself.

He has coordination problems and shows difficulty throwing, catching, and riding a bicycle.

He has difficulty learning to read; making later academic learning stressful.

He has difficulty writing, and will often twist his paper, hold his head abnormally close, break his pencil point, erase frequently, or drop his pencil.

He has difficulty coloring within the lines, writing on a line, or cutting accurately with scissors.

His classroom behavior may range from disruptive hyperactivity to total withdrawal.

He has poor self-concept. He knows that frequent failure and frustration will often go along with his attempts at anything new or previously untried. He often says, "I can't," or "I can't do anything well, so I must be stupid."

Coleman, H.M. and Dawson, S.T. "Educational Evaluation and Visual-Perceptual-Motor Dysfunction." Journal of Learning Disabilities, 2(5), May 1969.

The author evaluates some commonly used standardized tests in terms of children with visual-perceptual-motor problems.

The Stanford-Binet is often administered as an individual psychological test. It is constructed on a spiral omnibus format which presents the easiest items of each type first. The examiner predetermines the starting point and the subject's performance determines the range of item difficulties covered in his test. A basal age is established on the first level in which the subject gives all corred responses. Additional credit is given in months and the final score is a mental age. Children with a visual-perceptual-motor dysfunction usually establish a basal age several years below chronological age because each set of tests includes at least one item demanding well-integrated visual-perceptual-motor skills and organization.

The Wechsler Intelligence Scale for Children (WISC) is built on the global concept of intelligence 'g' factor, and renounces the concept of mental age as a basic measure of intelligence. The subtests are equally divided between verbal and performance tests and the child with a visual-perceptual-motor problem has difficulties with both. The author ennumerates possible problems with each subtest.

Picture vocabulary tests such as the Peabody Picture Vocabulary Test (PPVT) are designed to estimate a child's verbal intelligence by measuring his hearing vocabulary and listening abilities. Children with visual-perceptual-motor problems are expected to perform better on a picture vocabulary test than on a standard intelligence test because a visual stimulus is supplied to illustrate and supplement the word meaning. However, the child must be able to integrate these pictures successfully.

The requirements of group testing (audio and visual facility, attention span, etc.) often militate against a good performance by the child with visual-perceptual-motor problems. Most group IQ tests on the elementary level closely resemble readiness tests. The Otis-Lennon is the clearest test available in terms of format, pictorial representation and directions, though the format is somewhat cluttered and the pictures small. The Lorge-Thorndyke is so visually demanding as to be confusing to adults. A persistent problem for children with visual-perceptual-motor difficulties is their inability to cope with the test material itself. The Metropolitan Readiness Test presents many such obstacles to the student.

A short section on test interpretation and statistical understanding is also included.

deHirsch, Katrina; Jansky, Jeannette Jefferson; and Langford, William S. Predicting Reading Failure, A Preliminary Study of Reading, Writing, and Spelling Disabilities in Pre-School Children. Harper & Row Publishers, New York, 1966, 144 pp.

Twenty years of clinical experience with intelligent, but educationally disabled children, whose learning drive has become severely damaged, has convinced us that many of these children would not have required help had their difficulties been recognized at early ages. Early identification would have obviated the need for later remedial measures.

This study has attempted to develop techniques for the early identification of children who, at kindergarten age, seemed to present a specific pattern of dysfunctions, reflecting an underlying developmental lag.

A battery of ten tests was finally chosen as the best identifier of children who would fail in reading. This included: Pencil Use, Bender Gestalt Test, Wepman Auditory Discrimination Test, Number of Words Used in a Story, Categories, Horst Reversals Test, Gates Word Matching Test, Word Recognition I and II, and Word Reproduction.

The children whose reading achievement at the end of second grade comprised the bottom 15% of the sample were termed "Failing Readers." As a group, they were markedly hyperactive, distractible, impulsive and disinhibited. Their auditory-perceptual and oral language tools were inferior to those of the other subjects. The "slow starters," those who showed great improvement from the end of 1st to 2nd grade, didn't show these traits. The "superior achievers," the top 15% of the sample, were described as physically and emotionally mature.

Children's developmental rhythm varies widely. Recognition of and respect for these variations are crucial at a time when society places increased pressures for early achievement on both children and parents. Such recognition implies the taking of active educational measures geared to the child's individual needs at his particular developmental level.

Differential Educational Project. Lamphere School District, Madison Heights, Michigan. January 1967.

A comparative study of two groups of children, sixteen in each group, was made for a two and one-half month period during the 1966 school year in the Lamphere School District. The first hypothesis made was that perceptual-motor activities would enhance scholastic performance. The second hypothesis made was that visual-perceptual activities (which is a composite of visual-motor and perceptual-motor activities) would be of significantly greater benefit in enhancing scholastic performance.

Both teachers, one of each group, were equally trained and experienced in carrying out the physical aspects of the program. Group A consisted of sixteen fifth and sixth grade children who were one year or more behind grade level in reading achievement. Group B consisted of sixteen fourth, fifth and sixth grade students who were diagnosed as not achieving to their highest potential. Children in Group A were given perceptual-motor activities as part of their daily classroom activities. Children in Group B were visually screened by a vision specialist, and performed specific visual-motor activities in addition to the same perceptual-motor activities as Group A.

Both groups were pre- and post-tested with standardized reading tests employed in the school. The normal growth expected in reading achievement would be two and one-half months. Group A students, who were given perceptual-motor activities exclusively, showed a mean gain of 4.7 months or 2.1 months additional gain in reading performance. Group B students, who were given visual-motor activities in addition to the perceptual-motor activities, manifested a mean gain of 7.1 months in reading performance or 4.5 months additional gain over the expected norm. This was 2.4 months gain over Group A.

This evidence supports the hypothesis that combined visual-motor activities will be of significantly greater benefit in the learning ability of children, and that learning will be benefited by the inclusion of visual-motor and perceptual-motor activities into the curriculum.

Falik, L.H. "The Effects of Special Perceptual-Motor Training in Kindergarten on Reading Readiness and on Second Grade Reading Performance." Journal of Learning Disabilities, 1969, 2(8), 395-402.

The author tested whether perceptual motor training would aid children's reading skills. Two groups of kindergarten children were used in the study. The experimental group received perceptual motor training during the year, including form and space perception tasks. The control group did not receive such training.

It was found that the experimental group did not differ significantly from the control group in reading readiness nor on second grade reading performance. There was little relation between form perception and reading; as well as between space perception and reading.

Frostig, Marianne. "Visual Perception in Brain-Injured Children." American Journal of Orthopsychiatry, 1963, 33(4), 665-671.

Perceptual disability, regardless of etiology, can be detected and specific perceptual training instituted. A test has been devised to give a child's perceptual age and quotient. Five areas of perception were used; eye-hand coordination, figure-ground perception, perception of form constancy, perception of position in space, and of spatial relationships. These abilities were chosen because of their crucial importance for school learning. They were found to develop relatively independently of each other. It was found that development of visual-perceptual processes is a major function of the growing child between ages of three and seven, and that at this age level perceptual development becomes a most sensitive indicator of developmental status of the child as a whole.

Gesell, Arnold (Yale University, New Haven, Connecticut). "Child Vision and Developmental Optics." Annee' Psychology, 1951, 379-395.

Developmental optics is concerned with the ontogenesis and organization of visual functions in their dynamic relation to the total action system, and is a logical and necessary extension of visual science. Vision is an act mediated by eye and brain, but emanating from a growing action system. Specific acts of vision emerge within the total unitary pattern of the organism. Nothing less than a systematic developmental methodology can do justice to the stable and changing characteristics of vision through infancy and childhood.

Ilg, Frances L.; Ames, Louise Bates, and Apell, Richard J. "School Readiness as Evaluated by Gesell Developmental, Visual and Projective Tests." Genetic Psychology Monographs, 1965, 71(1), 61-91.

A public school population of 81 kindergarten, 26 first grade and 31 second grade students were screened for three successive years on developmental, projective, and visual tests. Up to 50% of the students appeared unready for the grade to which they had been assigned on the basis of chronological age alone. Test findings were highly consistent from one year to another. For younger students there was a higher agreemetn (83%) between predictions made on the basis of developmental test findings in the fall of any year and teacher judgment in the succeeding spring.

Ismail, A.H. and J.J. Gruber. Motor Aptitude and Intellectual Performance.
Columbus, Ohio: Merrill, 1967.

The purposes of this book are:

1. To identify the factors or components which are present in a wide variety of selected items which authorities claim to measure motor aptitude and intellectual achievement for pre-adolescent children.

2. To develop motor aptitude test batteries for predicting intellectual achievement for pre-adolescent children.

3. To investigate the relative contribution or the importance of coordination and balance items in the prediction of intellectual achievement.

4. To investigate the difference, if any, between sexes and levels of achievement pertaining to motor aptitude test items.

5. To validate the above findings experimentally by investigating the relative effectiveness of an organized physical education program on intellectual performance.

Conclusions:

1. Conclusions Pertaining to Sex:

A. Growth items are not related to intelligence except for age.
B. Speed, power, strength and accuracy are generally not related to intelligence.
C. Coordination is related to intelligence.
D. Balance and kinesthesis are related to intelligence to a higher degree in girls than in boys.
E. In general, growth items are not related to academic achievement.
F. Speed, power, strength and accuracy are not related to academic achievement.
G. Coordination is related to academic achievement.
H. Balance and kinesthesis are related to a higher degree to academic achievement in girls as contrasted with boys.
I. In general, it is reasonable to conclude that the coefficients for both boys and girls are not in conflict with each other.

2. Conclusions Pertaining to Levels of Intellectual Performance:

A. Growth items in general are not associated with intelligence except in the case of low achievers.
B. Speed, power, strength and accuracy are generally not related to intelligence.
C. Coordination is not related to intelligence except in the case of medium achievers.
D. Balance and kinesthesis are not related to intelligence.
E. In general, growth items are related to academic achievement.
F. Speed, power, strength and accuracy correlated differently among the three levels of achievers.
G. Coordination is related to academic achievement.
H. Balance and kinesthesis are not related to academic achievement.

3. Conclusions Pertaining to Factors Associated with Sex and Level of Academic Achievement:

	Total	Boys	Girls	Medium	High	Low
1. Academic Development	X	X	X	X		X
2. General Balance	X	X	X	X	X	
3. Physical Growth & Maturity	X	X	X	X	X	X
4. Coordination of Lower Limbs	X	X	X	X	X	
5. Dynamic Balance on Objects	X		X			
6. Eye-Hand-Foot Coordination	X	X	X	X		X
7. Kinesthetic Memory of Arms	X	X	X	X	X	
8. Motor Performance Involving Lower Extremities		X		X		
9. Growth & Achievement					X	
10. General Static Balance					X	X
11. Mental & Motor Aptitude					X	X
12. Balance & Coordination of Lower Limbs						X
13. General Kinesthesis						X

4. Conclusions Pertaining to Motor Aptitude Test Batteries for Predicting Intellectual Achievement:

A. There is a sex difference in the predictive power of motor aptitude test items for estimating the Otis I.Q., Stanford Academic Achievement and sub-tests scores favoring the girls rather than the boys. Hence, intellectual items can be estimated more accurately in girls than in boys. The difference in the predictive power of motor items between boys and girls might be due to power of discrimination of the motor items in relation to sex. In other words, motor items discriminate more among girls rather than among boys.

B. There is a difference in the predictive power of motor aptitude test items for estimating the Otis I.Q. scores favoring low achievers, medium achievers, and high achievers in that order. Hence, Otis I.Q. scores may be estimated more accurately in low achievers.

C. In general, there is a difference in the predictive power of the motor aptitude test items favoring medium achievers, high achievers and low achievers in that order when estimating total Stanford Achievement and some of the sub-tests scores.

D. In general, Otis I.Q. scores can be predicted more accurately than Stanford Academic Achievement and sub-tests scores in boys, girls, the total group, and low achievers.

E. In general, some Stanford Academic Achievement scores can be predicted more accurately than Otis I.Q. scores in the medium and high achievers.

F. In general, classification of children into identifiable sub-groups according to sex and levels of achievement is desirable for increasing the predictive power of motor aptitude test items when estimating Otis I.Q. and Stanford Academic Achievement scores.

G. Motor aptitude test batteries were developed for estimating intellectual performance. These batteries meet one important criterion, namely they appear to be "culture free" or "culture fair" tests. The motor aptitude test batteries have several advantages. Some of these advantages are:

(1) being non-verbal in nature; (2) not associated with undesirable emotional set which is usually present with paper and pencil testing; (3) does not depend on a person's ability to use paper, pencil or draw something designated by a tester; and (4) promotes a healthy testing atmosphere since the tests are conducted in a play situation.

5. Conclusions Pertaining to the Relative Contribution of Balance and Coordination Items in the Prediction of Intellectual Achievement:

In general, the best predictors are coordination, balance, and growth items in that order. Speed, power and strength items have low predictive power for estimating intellectual achievement.

6. Conclusions Pertaining to Sex Differences as Well as Differences Associated with High, Medium and Low Achievers:

In terms of sex, it may be concluded that girls are larger in physical and have less kinesthetic sense than boys. Meanwhile, boys are faster and more accurate in basketball shooting than girls. There are no sex differences in mean scores on items measuring power, strength, static balance, most dynamic balance items and Stanford Academic Achievement scores. For some unexplained reason boys had significantly higher Otis I.Q. scores than girls.

Regardless of sex and in terms of high, medium and low achievers, it may be concluded that the low achievers for the most part are larger structurally than either the medium or high achievers. Meanwhile, the high achievers have more coordination and balance than either the medium or low achievers in that order.

There were no differences between high and medium achievers in terms of dynamic balance. This also was the case when comparing medium and low achievers. However, high achievers obtained significantly higher dynamic balance scores than low achievers. There were no differences between high, medium and low achievers in terms of kinesthesis.

As expected, the high achievers have higher intellectual abilities than either the medium or low achievers in that order.

7. Conclusions Pertaining to the Effect of an Organized Physical Education Program on Intellectual Performance:

An organized physical education program has no effect on I.Q. scores. However, it has a favorable effect on academic achievement scores.

Kephart, Newell, C. (University of Purdue, Lafayette) "Perceptual-Motor Aspects of Learning Disabilities." Exceptional Children, 1964, 31(4), 201-206.

This paper stresses the importance of perceptual-motor orientation in the child as a foundation for the symbolic and conceptual activities of the classroom. Consistent and efficient motor patterns permit the child to explore his environment and systematize his relationship to it. Perceptual data are similarly systematized by comparing them with this motoric system. Through such perceptual-motor matchings, the perceptual world of the child and his behavioral world come to coincide. It is with this organized system of perceptual input and behavioral output that the child attacks and manipulates symbolic and conceptual material in a veridical fashion.

Levi, Aurelia. "Treatment of a Disorder of Perception and Concept Formation in a Case of School Failure." Journal of Consulting Psychology, 29(4), 1965, pp. 289-295.

A report of a year's specialized treatment of an 11-year-old boy brought to a psychiatric clinic for failing school work. Initial psychological testing indicated a commonly encountered picture; that is, grossly deviant test patterns suggestive of Central Nervous System dysfunction, with particularly poor visual-motor and conceptual performances. Treatment goals were: (a) to realize consciously the notion of category, (b) to acquire a store of categories, (c) to learn to scan categories for appropriate selection from them. Perceptual confusion was to some extent reduced through verbal techniques. At the end of the year of treatment, retesting showed improved test performance; school grades were reported as satisfactory; a follow-up 6 months later indicated that school performance continued adequate.

McDonald, Charles W. "Problems Concerning the Classification and Education of Children with Learning Disabilities." In *Learning Disorders*, Vol. 3, Seattle, Washington: Special Child Publications, 1968, pp. 373-394.

Because of the increased interest being shown by educators throughout the United States in children with special learning disorders, the Southern Regional Education Board, in collaboration with a number of southern universities and colleges, has undertaken to study the concepts, procedures and programs being developed for these children.

The purpose of this paper is to discuss the problems associated with the classification of such children and to suggest a way of resolving some of these problems.

In the beginning of this study it seemed wise to delineate and identify very clearly the population of children about whom we were going to be concerned. This is where the fun really began. It was immediately obvious that there were almost as many different populations of children as there were people working in the field.

Not only was there a population problem, but there was also a semantic problem. Thus far, thirty-five persons, who answered the questionnaire, have given twenty-two terms which one or more of them use as an exact synonym for the title "Children with Learning Disorders."

Synonyms:

1. Brain Injured
2. Developmental Imbalance
3. Educationally Handicapped
4. Interjacent Child
5. Language Disorders
6. Learning Disabilities
7. Learning Impaired
8. Minimal Brain Dysfunction
9. Minimal Cerebral Dysfunction
10. Performance Deviation
11. Performance Disability
12. Performance Handicapped
13. Problem Learners
14. Problem Readers
15. Psycholinguistic Disabilities
16. Psychoneurological Disorders
17. Psychoneurological Learning Disability
18. Reading Disabilities
19. Remedial Education Case
20. Special Learning Disabilities
21. Specific Learning Disability
22. Underachievement

Rather than advocating the immediate abolition of existing special education categories it may be more realistic and productive to:

1. Call a halt to the proliferation of medically oriented special education categories. If a new category is to be established, the parameters of the sub-population should consist of variables which are relevant to the children's learning characteristics and the educational programs best suited to their needs.

2. Begin a rigorous research program aimed at establishing the relationship between performance variables and learning processes: particular emphasis being given to the learning processes underlying the acquisition of the skills, concepts and competencies which constitute the terminal goals of our formal educational program.

3. Systematically investigate the cross-group relevance (in terms of effectiveness and efficiency) of the various educational programs which have been developed and are being developed in the different areas of special education; and use these studies to explore possible re-grouping of children for instructional purposes.

4. Establish pilot projects for heterogeneous groups of children who are failing to achieve academically up to the level of their age and potential. In these projects an attempt should be made to see at what point (either because of the requirements of educational programming, educational technology, the learning characteristics of the child, and/or the personality or skill of the teachers), children need to be placed into distinct and different types of educational programs.

McNinch, George. "Predictive Values of Selected Auditory Perceptual Factors in Relation to Measured First Grade Reading Achievement." University of S. Mississippi Reading Center; unpublished paper.

The purpose of this study was to test the following hypotheses:

1. There are no significant correlations among the various auditory perceptual prereading measures.
2. There are no significant differences noted on prereading measures between boys and girls.
3. There are no significant relationships between the prereading measures and measured reading achievement at the end of the school year.
4. There are no significant differences noted on mean reading achievement between boys and girls as measured by the instrument.

The children tested were 111 first-grade students, randomly selected from the first-grade classrooms in a Southern primary school. The instruments used for evaluation were:

1. Auditory-visual Rhythm Perception Test (AVRP)
2. Aural Word Representation Test (AWR)
3. Roswell-Chall Auditory Blending Test
4. "Digit Span" subtest of the Wechsler Intelligence Scale for Children (WISC)
5. Subtest four, "Making Auditory Discriminations, "of the Harrison-Stroud Reading Readiness Profiles.
6. Lorge-Thorndike Intelligence Tests
7. SRA Achievement Tests (Primary Battery, form C)

The auditory perceptual variables as measured by the selected instruments did seem to be related in a generic relationship. However, it appeared that the instruments were measuring different skills. This conclusion is based on the fact that the computed inter-correlations were significant, but the coefficients of determination were quite small.

Sex had no statistically significant effect on test performance on the prereading or reading variables. However, a positive trend of superiority by girls was noted on all measures.

Mental Age, Auditory Memory, Letter Names and Using Context and Auditory Clues comprises the major vector weights in the prereading set of the canonical correlations.

When prediction of reading achievement in grade one is the purpose of preinstruction evaluation, it would appear that redundant information is supplied when combined assessments are sought through the auditory perceptual skill hierarchy, the reading readiness test, and the intelligence measure. More economical prediction or screening could probably be made through selective test administration. There would seem to be some value in measuring mental age, letter names and using context and auditory clues.

Myklebust, Helmer R. Progress in Learning Disabilities. New York: Grune and Stratton, 1968.

Chapter 1: "Learning Disabilities: Definition and Overview." Learning disabilities can be attributed to neurogenicity, a dysfunction of the brain. They differ from mental retardation in that the capacity to learn still exists and the normal outcome is expected.

The diagnosis is:

1. Generalized integrity
2. Deficit in learning
3. Brain dysfunction

A learning disability can be either verbal or nonverbal.

The learning quotient (L.Q.) is used for classification:

$$L.Q. = \frac{\text{Achievement Scores}}{\text{Expectancy Age}} \quad \text{where Expectancy Age} = \frac{MA+CA+GA}{3}$$

Learning may be impaired in five ways:

1. Peripheral nervous system involvement
2. Mental retardation
3. Emotional disturbance
4. Cultural disadvantage
5. Neurogenic involvement (brain dysfunction)

Chapter 10: "Education for Children with Learning Disabilities."

There exists a learning disability interplay between environmental circumstance and neurological handicap. A multidisciplinary approach is recommended for treating learning disabilities, since there is no one symptom common to all of them.

The use of diagnostic teaching is recommended. Emphasis is placed on the importance of the developmental sequence:

1. Sensory-motor phase
2. Language phase
3. Perceptual phase
4. Higher cognitive processes

Learning disabilities may be found in one or all of the following areas:

1. Sensory-motor abilities
2. Language
3. Perception
4. Thought processes
5. Emotions
6. Social behavior

Children with learning disabilities have problems that differ in degree but not in kind from normal children.

O'Donnell, P.A. and Eisenson, J. "Delacato Training for Reading Achievement and Visual-Motor Integration." Journal of Learning Disabilities, 1969, 2(a), 441-447.

The investigation reported here was an attempt to determine the effects of a motor training program on the reading achievement and visual motor integration of disabled readers with crossed or uncertain lateral expression. Some empirical verification of the usefulness of the program would be helpful to educators who must make curricular decisions regarding appropriate remediation..." This experiment found that the delacato training method had no significant effect on children's reading achievement.

Paine, Richard S. "Organic Neurological Factors Related to Learning Disorders," in Hellmuth, Jerome (ed.), Learning Disorders. Seattle, Washington: Special Child Publications, 1965, pp. 1-29.

Minimal brain dysfunction affects approximately 4 to 5 percent of the general school population.

The various types can be classified as follows:

1. Cerebral palsies-clumsiness, tremor, hyperreflexia
2. Mental deficiency-overactivity, distractibility, low frustration, perseveration
3. Cortical blindness-impaired memory for shapes and designs
4. Deafness
5. Visual field-impaired spatial concepts
6. Asterognosis-visual or tactile in attention
7. Epilepsy-abnormal EEG without seizures

Hyperactivity is the most frequent complaint. It is suggested that this results from a low tolerance for frustration which may be compensated for by a quick attempt to change the subject.

Peter, Laurence J. Prescriptive Teaching. McGraw-Hill, New York, 1965, 246 pages.

Prescriptive is defined as the translating of interdisciplinary diagnosis into educational implementation. Diagnosis must direct the path of education.

Chapter 2 discusses learning processes and the diagnosis of various learning problems.

Chapter 3 deals with the concept of core study.

The essence of Peter's work is contained in Chapter 4 where his multidimensional model is given. A brief description of the model will be given. There are 3 dimensions: (1) problem variables, (2) situation variables, (3) school variables. The problem variables are: (a) injury, (b) disability, (c) handicap. The situation variables are: (a) nature of the problem, (b) therapeutic procedures, (c) time factors, (d) social conditions. The school variables are given ranging from the most to the least modifiable. (a) Consistent approach, (b) teaching methods, (c) specific objectives, (d) ancillary services, (e) placement and personnel, (f) subject matter, (g) instructional materials, (h) special equipment, (i) school placement, (j) auxillary services.

The following comments are with reference to general prescriptive teaching concepts. Prescriptive teaching is based on the modification of one or more variables in the educational program. The objective of prescriptive teaching is to make use of available resources in order to facilitate learning.

Prescriptive Teaching

Chapter 8 shows how prescriptive teaching attempts to place the child and teacher in proper perspective so that the child's learning can be affected.

Chapter 9 delineates the various phases that prescriptive teaching must encounter: (1) describing symptoms, (2) investigating etiology, (3) performing diagnosis, (4) prognosis, (5) prescribing treatment, (6) implementation of treatment, (7) follow-up.

Follow-up is critical for it provides the feedback which supports the modification.

Chapter 10 provides general conclusions, one being, "prescriptive teaching is concerned with what can be done, rather than the child's irreversible past."

Project Genesis Final Report. Dorothy Jens, Coordinator. Lakeview Public Schools, St. Clair Shores, Michigan, 1967-1970.

Summary Project Genesis is a preventative program which attempts to identify any child with a potential learning deviancy before he enters kindergarten and to provide supplementary programming to offset a future learning problem.

Need Children with learning problems were not being referred for help until the emotional consequences of failure had accumulated to such a serious point that academic failure was often the child's least problem. Remediation for long standing cases is expensive, time consuming, discouraging and usually needs concurrent supportive help in more areas than the academic. The objective of Project Genesis was to transfer the emphasis of the highly trained special services people to prevention and immediate programming to prevent failure rather than waiting for referral for remediation after problems were ingrained.

Scope The scope of learning problems which received remediation included giftedness as well as motor, perceptual, conceptual and language problems.

Methods Clinics were held each spring staffed by specially trained school personnel, and each child who would enter kindergarten the following fall was checked for perceptual-motor abilities, hearing, speech, language development, vision, developmental maturity and learning readiness. The results of the screening were recorded on a profile which was then discussed with the future classroom teacher. Children having normal expectancy in all areas covered by the screening were dropped from the project with later referral always available. Summer programs were planned for some of the children.

In the fall all children attended regular kindergarten classes (unless the child was diagnosed as too immature--in this case he came to school once or twice a week for short periods to work with Genesis personnel and entered kindergarten the following fall). Each child who displayed a potential learning problem during the screening had an individualized program of learning activities developed for him by the Project Genesis Child-er (a master teacher trained in developmental learning). The Child-er implemented these activities in individual or small group sessions utilizing the services of a Perceptual-Motor Aide (a paraprofessional trained in an optometric clinic). Children came to the Genesis room weekly or daily, depending upon their particular problem. The Child-er also developed suggestions for the classroom teachers to use with these children in the regular classroom and counseled parents in activities they could do at home to help their child. For those children who continued to need help into the 1st and 2nd grades, Genesis programs were maintained.

A vision consultant (an optometrist trained in developmental vision) spent 1/2 day a week rechecking children with vision problems and aiding the Child-er in developing appropriate programs in that area.

Project Genesis Final Report

Results Second grade children who had been exposed to the availability of Genesis programming for three years scored significantly higher on tests of auditory perception and visual-motor integration than did second grade children in control schools.

Staples, M.J. "School Frustrating for Perceptually Handicapped Child." Ann Arbor News, January 27, 1972, p. 19.

This article reports on an interview with Marjorie Olson, an art teacher who works with 30 perceptually handicapped children in an Ann Arbor elementary school.

Ms. Olson describes a perceptually handicapped child as one who can see, but generally lacks the ability to integrate incoming stimuli. Possible causes of perceptual handicaps are slight brain damage (due to long labor when the child was born, for example) or emotional problems.

There are five major areas of perceptual handicaps and there are specific exercises which Ms. Olson used in trying to alleviate each.

1. Coordination: the child's mind and hand will not work together. Exercises: Games like "Mother May I?" and "Simon Says;" art activities like cutting, fringing, pasting.
2. Figure-ground: The child is unable to distinguish one object from other objects in the surrounding area. Exercises: Drawings within drawings to help the child differentiate.
3. Constancy: The child is unable to recognize a shape when seen from a different position. Exercises: Sorting buttons according to size or color.
4. Position in space: The child has difficulty in recognizing the relationship of other objects to himself. Exercises: Drawing a picture and then acting it out; assembling puzzles of men and relating puzzle parts to body part.
5. Space relations: The child has difficulty in recognizing the relationship of objects to each other. Exercises: Arranging a row of forks and spoons in sequence, going through a finger maze.

Stevens, Godfrey D. and Jack W. Birch. "A Proposal for Clarification of the Terminology Used to Describe Brain-Injured Children." In Educating Children with Learning Disabilities, Edward C. Frierson and Walter B. Buble (eds.). New York: Appleton-Century Croft, 1967.

The purpose is to suggest a more accurate term for the phenomena reported by Strauss. Distorted behavior is not always evidence for brain damage; also, the existence of brain damage does not necessarily imply certain kinds of behavior. The authors of this chapter suggest that the term "Strauss Syndrome" should be used instead of "brain injured." "Brain injured" is an etiological concept and does not appropriately describe the symptom complex. The term "Strauss Snydrome" refers to the behavioral characteristics that Strauss initially noted. These being in general: poor organization, hyperactivity, disturbances in thinking, disturbances in perception and disturbances in behavior.

Strauss, Alfred A. and Lehtinen, Laura E. Psychopathology and Education of the Brain-Injured Child. New York: Grune and Stratton, 1947.

Definition: A brain-injured child is a child who, during or after birth, has received an injury to or suffered an infection of the brain. As a result of such an organic impairment, defects of the neuromotor system may be present or absent; however, such a child may show disturbances in perception, thinking, and emotional behavior, either separately or in combination.

Perception is an intermediate between sensation and thought, and, therefore, has organization. Perceptions are received as wholes; a whole is perceived as a foreground against a background. Perceptual disturbances of brain injured children belong in a characteristic perceptual-motor syndrome which can be observed to exist in the visual, tactual and auditory fields.

West Warwick Visual Perception Study Final Report (OEG #67-03195-0). Howard Coleman, Director. West Warwick, Rhode Island, September 1970.

This study was conducted to determine if there is a relationship between visual-perceptual-motor skills and academic performance. Over four thousand children were evaluated with a new test of visual-perceptual-motor behavior. The test was refined through factor analysis. Two of the factors in the test were found to predict one-third of the academic achievement of First Grade children. Twenty-six percent of the children who failed had low visual-perceptual-motor scores. The present study shows that intervention is possible using a motor-based approach to learning combined with a phonic skills approach to reading instruction. Children whose failure seemed assured were brought to above-average levels of academic performance.

DiCarlo, L.M. "Critique of Audiometers." In O.K. Buros (ed.) The Sixth Mental Measurement Yearbook. Highland Park, New Jersey; The Gryphon Press, 1965, 940.

"Beltone Model 9-C. The Beltone 9-C is a basic audiometer for screening purposes. It is portable, durable and easy to manipulate. The instrument has proved to be stable and drift free. Purity of tone and accuracy of output levels meet the criteria for screening audiometers. It has a slide wire attenuator and is easy to calibrate. The output limit is 100 db."

ELEMENTARY SCHOOL INFORMATION - FAIR CITY

					INFORMATION FOR 9-72						
INDEX	NAME	ADDRESS & TELEPHONE	OPENED	ADDITION	Teaching Stations	Classrooms in Use	Portables	Enrollment	Teachers	Site (Acres)	PER PUPIL COST
1	L.J. Horner	2670 Tyler St. 936-3566	1957		12	11	0	367	12	10	$605
2	P.P. Pumpkineater	2560 Johnson Ave. 158-8565	1941	1960	27	26	2	808	27	11	$612
3	Knaveofhearts	1608 Douglas St. 693-0266	1953	1965	21	20	0	630	21	9	$625
4	Jackandjill	600 Hamilton St. 293-0622	1923		25	24	1	786	25	8	$597
5	H.D. Dock	2775 Burr Drive 168-2791	1961		21	20	0	651	21	9	$618
6	M. Goose	1414 Jay Avenue 608-4686			22	20	0	660	21	10	$621
7	Lamb	4250 Lee Street 904-0471	1959		25	23	1	714	24	11	$630
8	L.M. Muffet	2935 Grant Avenue 691-4700	1967		16	14	0	455	15	11	$627
9	J. Sprat	2135 Allen Lane 893-0265	1940		21	17	0	457	20	15	$682
10	Calicocat	3540 Darwin Ct. 719-2663	1955		28	25	1	772	27	17	$701
11	T. Blindmice	800 Lafayette Dr. 888-6866	1970		25	22	0	666	24	18	$710
12	H.D. Diddle	825 Patton Ave. 821-6597	1922	1951	22	20	0	621	22	14	$699
13	O.K. Cole	3800 Stowe St. 895-7771	1960		26	24	1	762	25	12	$660

(Continued)

					INFORMATION FOR 9-72						
INDEX	NAME	ADDRESS & TELEPHONE	OPENED	ADDITION	Teaching Stations	Classrooms in Use	Portables	Enrollment	Teachers	Site (Acres)	PER PUPIL COST
14	Shaftoe	344 Anthony Ave. 650-4665	1969		27	24	1	766	26	15	$671
15	M.M. Contrary	2250 Keyes Ct. 564-8760	1958		19	15	0	339	18	18	$705
16	Inashoe	920 Frost St. 561-6623	1965		22	20	0	662	21	13	$640
17	S. Simon	4377 Blackwell Ave. 112-3434	1956	1963	18	17	0	616	18	10	$599
18	Hubbard	3550 King Drive 179-4150	1944	1952	16	15	0	554	16	11	$590
19	Sixpence	2775 Wilson St. 178-0200	1952		11	11	0	420	11	9	$593
20	B.B.B. Sheep	2100 Harding St. 194-0620	1925		13	12	0	441	12	7	$580
21	L.B. Blue	2543 Lowell Rd. 197-3774	1962		8	7	0	241	7	8	$586

Fishback, T.J. Study of Relationships of Reading Mastery Level to General Reading Achievement to Validate Diagnostic Reading Tests. AERA, New York, February 4-7, 1971.

This study provided support for the basic notion that general reading level is related to the number of specific reading skills mastered. This relationship was more strongly supported at higher grade levels.

Subjects in 1st to 6th grades were given the Level of Word Attack subtests of the Wisconsin Design for Reading Skill Development which is most appropriate for initial diagnostic purposes for these particular children. Grade equivalent scores on two or more standardized reading achievement tests for each S were obtained from the school.

The criterion for mastery in a Word Attack subtest was then 80% or more of the items on the subtest were answered correctly. The number of skills so mastered was determined, and this was the mastery score for the student.

The relationship which was expected if the skills measured by the subtests were important for reading proficiency, if they were of nearly equal importance, and if the mastery score was positively related to general reading level, was a simple polynomial function which was monotonically increasing over the range of possible mastery scores. The expected relationship developed.

Harckham, Laura D., Gunning, A.F., and Waldron, C. "Multiple Prediction of Reading Achievement in Grades One Through Four Using Kindergarten Measures." AERA, New York, February 4, 1971.

This was a longitudinal study involving 533 K-4 children to determine whether measures that are readily available in most school districts taken in kindergarten by classroom teachers can predict reading achievement as measured by standardized tests in succeeding grades. Kindergarten students were given the Metropolitan Readiness Test (MRT), Goodenough Draw-a-Man Test (DAMT), Ranking by teacher (TR), and a Composite Behavior Rating Scale (BRS). The scores which were predicted were the Metropolitan Achievement Test in 1st grade and the Stanford Achievement Tests in grades 2 through 4.

TABLE 1

**CORRELATIONS BETWEEN PREDICTORS AND CRITERIA

Variable	Grade 1	Grade 2	Grade 3	Grade 4
MRT Total	.63	.70	.74	.72
MRT Subtests				
Word Meaning	.44	.53	.61	.55
Listening	.31	.33	.37	.38
Matching	.50	.46	.51	.50
Alphabet	.63	.67	.68	.65
Numbers	.50	.58	.62	.59
Copying	.49	.51	.53	.53
DAMT	.39	.39	.39	.39
BRS	.53	.53	.49	.52
TR	.53	.53	.54	.52

**p .01

The correlations between the MRT and BRS and TR were .60 and higher. Correlations between the BRS and TR were .63 to .67. The MRT contributed about 40% to 55% of the variance. When subtests of the MRT were used as predictors, 40% to 46% of the variance was contributed by the alphabet subtest. The DAMT was found to be the poorest predictor. The authors concluded that for gross screening purposes, use of the MRT alone, appeared to be sufficient.

Jacobs, J.N. "An Evaluation of the Frostig Visual-Perceptual Training Program." Educational Leadership, 1968, 25(1), 332-340.

The Marianne Frostig Developmental Test of Visual Perception has been used in connection with the prediction and diagnosis of reading difficulties; the Frostig Visual-Perceptual Training Program was designed to be used in conjunction with the test for the purpose of remediating the revealed reading difficulties. The test has five subtests: Eye-Motor Coordination, Figure-Ground Perception, Perception of Form Constancy, Perception of Position in Space, and Spatial Relationships. Frostig maintains that each of the abilities measured by the subtest is related to the skills necessary for reading.

One purpose of the study reported in this article was to determine whether children who participated in the perceptual training program attained higher scores on the Frostig test than children in the control groups. This hypothesis was confirmed, but there was definite treatment-grade interaction.

A second hypothesis held that the younger children in the experimental group would show larger gains than the older children, since perceptual development is thought to occur mainly between the ages of four and seven. This hypothesis was rejected since exactly the reverse phenomenon occurred.

The third hypothesis proposed that the pupils in the perceptual training program would score higher than the control pupils on a reading readiness test. However, no significant difference was found between the readiness scores of the experimental and control groups.

Norman, R.D. and Daley, M.F. "The Comparative Personality Adjustment of
Superior and Inferior Readers." Journal of Educational Psychology,
1959, 50(1), 31-36.

The research literature on reading, reports equivocal results about the relationship between reading ability and personality adjustment. The authors feel that the lack of clear results in the past was due to the inadequacy of statistical methods which could handle multivariate and interactional analysis. Thus, the experiment will take advantage of the newer statistical techniques.

The experiment was conducted in a middle class town. The children used in the study were 6th grade boys with I.Q.'s between 84 and 116 as shown by the California Test of Mental Maturity. Two groups were compared on the California Test of Personality within this group of subjects; a superior reading group which had a mean reading level score of grade 8.1 (N=42) was compared with a poor reading group with a mean grade level reading of 3.9 (N=41). An Anova revealed a significant F ratio on the overall adjustment of the two groups, although the differences between groups on subtests were only quasi-significant. They have hypothesized that several groups of variables seem to be related to poor reading ability although no factor analysis was done. These are poor family interaction, frustration-aggression by others, conflicts over dominance, environmental deprivation, aggressive toward others, impulsivity, rejection of others and inferiority feelings.

Robinson, H.M. "Visual Screening Tests for Schools." Elementary School Journal, 1953, 54, 217-222.

Visual Tests have been deemed important for schools to use for some time since good vision is certainly an aid if not a prerequisite for learning. The visual screening tests which ahve been developed are not to be used for diagnosis but only to identify children with a problem.

Researchers have done little to examine carefully the reliability or validity of such instruments or tests. This paper analyzes four such commercial batteries: The Keystone Visual Survey Test, the Massachusetts Vision Test, the Eames Eye Test, and the Ortho-Rater Test of Visual Efficiency. The subtests of each battery differ somewhat. The Ortho-Rater and the Keystone have the most subtests and test the most variety of visual skills. These two are also the most expensive. The batteries were given to 79 pupils in grades I-VIII and their validity was checked by comparing the test results with an opthalmological examination. The highest agreement between test result and opthalmological result was with the Ortho-Rater and the Massachusetts batteries. Considerably lower but still well correlated was the Keystone. The Eames battery did not correlate well at all.

The Reliability of these tests is not reported except for the Eames which is .93. A pilot reliability study was done with the Ortho-Rater and the reliabilities ranged from .68 to .82 with a mean of .77 on the test retest reliability.

The data here is preliminary but it points to the caution which should be used in selecting visual screening tests.

Bender-Gestalt Test

(1 Form)

Purpose: To diagnose visual-motor difficulties.

Type of Test: Individual visual-motor.

Range: 4-12 years, adults with MA's of 4-12 years.

Time for Administration: 10 minutes.

Cost: $2.25 per pad of 50 scoring sheets, $7.75 per manual.

Subtests: None

Scores: Single raw score.

Nature of Test:

The Bender-Gestalt Test consists of nine figures which are presented one at a time and which the subject is asked to copy on a blank piece of paper. Wertheimer (1923) had used the designs originally in order to demonstrate the principles of Gestalt Psychology as related to perception. Bender adapted these figures and used them as a visual motor test. In doing so, she applied the theory of Gestalt Psychology to the study of personality and to clinical practice. Bender points out that the perception and the reproduction of the Gestalt figures are determined by biological principles of sensory motor action and vary depending on (a) the growth pattern and maturation level of an individual, and (b) his pathological state, either functionally or organically induced.

Normative Data for the Developmental Bender Scoring System for Children

Age Group	Mean Scores	Standard Deviation
5-0 to 5-5	13.6	3.61
5-6 to 5-11	9.8	3.72
6-0 to 6-5	8.4	4.12
6-6 to 6-11	6.4	3.76
7-0 to 7-5	4.8	3.61
7-6 to 7-11	4.7	3.34
8-0 to 8-5	3.7	3.60
8-6 to 8-11	2.5	3.03
9-0 to 9-5	1.7	1.76
9-6 to 9-11	1.6	1.69
10-0 to 10-5	1.6	1.67
10-6 to 10-11	1.5	2.10

Distribution of Bender Mean Scores by School Grades

Grade Placement Beginning of Year	Mean Age	Mean Score	Standard Deviation
Kindergarten	5-4	13.5	3.61
1st Grade	6-5	8.1	4.41
2nd Grade	7-5	4.7	3.18
3rd Grade	8-7	2.2	2.03
4th Grade	9-8	1.5	1.88

Bender-Gestalt Test (continued)

Bender-Gestalt Test

Reliability: Test-Retest .70
Inter-Examiner .90

Validity : Fair

The Bender-Gestalt Test (Critiques)

See Also:

Billingslea, F.Y. "The Bender Gestalt: A Review and a Perspective." Psychological Bulletin, 1963, 60, 233-251.

Silberberg, N. and Feldt, L.S. "Intellectual and Perceptual Correlates of Reading Disabilities." Journal of School Psychology, 1968, 6(4), 237-245.

California Test of Mental Maturity (Short Form) (1 Form)

Purpose: To provide information about the functional capacities that are basic to learning, problem-solving, and responding to new situations.

Type of Test: Group intelligence

Range: Grades K-16

Time for Administration: 34-48 minutes

Cost: $4.20 per 35 tests, $.10 per scoring key

Subtests:
- Opposites
- Similarities
- Analogies
- Delayed Recall
- Numerical Values
- Number Problems
- Verbal Comprehension

Levels:
0 - Preprimary
1 - Primary
1H - Spans range between grades 3-4
2 - Elementary
2H - Spans range between grades 6-7
3 - Junior High
4 - Secondary
5 - Advanced

Scores: Scaled; Language IQ, Non-Language IQ, Total IQ

Nature of Test:

The California Short-Form of Mental Maturity consists of seven administrative test units, measuring aspects of mental ability, which contribute to a pattern of summary and derived scores (mental ages, intelligence quotients, standard scores, stanines, and percentile ranks) that are interpreted within a framework of inter and intra-individual differences. In addition to assessing the development of an individual or group with reference to national performance standards at each age level, the test results provide data as to the nature and potential of the abilities possessed by the individual. The Short-Form thus serves both survey and analytical purposes for educators, counselors, psychologists, and employers in a wide variety of testing situations.

California Short Form Test of Mental Maturity - Mean Intelligence Quotients & Standard Deviations of Mental Maturity Series, 1963 Revision & the Stanford-Binet Intelligence Scale Form LM 1960 Revision, Based on the Performance of the Sample Groups

Short-Form Level	Type of CTMM IQ	IQ Means		IQ SD's	
		Cal.	Binet	Cal.	Binet
Level 0	Total	109.4	108.2	14.9	14.8
	Language	109.4		16.6	
	Non-Language	107.6		14.	
Level 1		Cal.	Binet	Cal.	Binet
	Total	110.2	109.2	15.1	15.0
	Language	109.3		15.5	
	Non-Language	109.8		15.5	

Short-Form Level	Type of CTMM IQ	IQ Means		IQ S.D.'s	
Level 2		Cal.	Binet	Cal.	Binet
	Total	103.7	106.7	14.2	13.8
	Language	104.5		15.0	
	Non-Language	102.3		14.2	
Level 3		Cal.	Binet	Cal.	Binet
	Total	105.5	106.5	15.0	14.9
	Language	104.9		14.8	
	Non-Language	105.0		15.5	
Level 4		Cal.	Binet	Cal.	Binet
	Total	108.9	111.8	13.9	14.3
	Language	106.1		14.5	
	Non-Language	109.2		14.0	
Level 5		Cal.	Binet	Cal.	Binet
	Total	113.9	116.4	14.5	14.9
	Language	112.1		14.5	
	Non-Language	111.9		14.1	
All Levels		Cal.	Binet	Cal.	Binet
	Total	108.6	109.7	15.0	15.0
	Language	107.8		15.4	
	Non-Language	107.6		15.0	

California Test of Mental Maturity (Short Form)

Variables Level 0		Reliability Short Form	Validity Coefficients of Correlation
I.Q.	Total	.78	.68
	Language	.70	.61
	Non-Language	.59	.56
M.A.	Total	.78	.80
	Language	.70	.74
	Non-Language	.59	.71
Level 1			
I.Q.	Total	.83	.70
	Language	.73	.64
	Non-Language	.72	.57
M.A.	Total	.83	.89
	Language	.73	.87
	Non-Language	.72	.83
Level 2			
I.Q.	Total	.95	.74
	Language	.94	.70
	Non-Language	.89	.61
M.A.	Total	.95	.80
	Language	.94	.76
	Non-Language	.89	.69

Variables Level 0	Reliability Short Form	Validity Coefficients of Correlation
Level 3		
I.Q. Total	.91	.78
Language	.90	.77
Non-Language	.81	.65
M.A. Total	.91	.78
Language	.90	.77
Non-Language	.81	.63
Level 4		
I.Q. Total	.92	.71
Language	.91	.68
Non-Language	.83	.57
M.A. Total	.92	.76
Language	.91	.73
Non-Language	.83	.63
Level 5		
I.Q. Total	.91	.75
Language	.90	.75
Non-Language	.82	.56
M.A. Total	.91	.75
Language	.90	.75
Non-Language	.82	.57
Combined		
I.Q. Total	.91	.73
Language	.90	.69
Non-Language	.82	.60
M.A. Total	.91	.96
Language	.90	.96
Non-Language	.82	.94

California Test of Mental Maturity (Critique)

See Also:

Anderson, H.E. and Leton, D.A. "Factor Analysis of the California Test of Mental Maturity." Educational and Psychological Measurements, 1964, 24(3), 513-523.

Norman, R.D. and Daley, M.F. "The Comparative Personality Adjustment of Superior and Inferior Readers." Journal of Educational Psychology, 1959, 50(1) 31-36.

California Test of Personality

(2 Forms)

Purpose: To identify and reveal the status of certain highly important factors in personality and social adjustment usually designated as 'intangibles.'

Type of Test: Group personality

Range: Grades 1-adult (may also be used for kindergartin)

Time for Administration: 45-60 minutes

Cost: $3.50 per 35 tests

Subtests:
- Self-Reliance
- Sense of Personal Worth
- Sense of Personal Freedom
- Feeling of Belonging
- Withdrawing Tendencies
- Nervous Symptoms
- Social Standards
- Social Skills
- Anti-Social Tendencies
- Family Relations
- (School/Occupational) Relations
- Community Relations

Scores: Scaled for each subtest:

Personal Adjustment
(Sum of first 5 subtests)

Social Adjustment
(Sum of last 5 subtests)

Total Adjustment
(Sum of personal & social adjustment)

Nature of Test:

The California Test of Personality has been designed to identify and reveal the status of certain highly important factors in personality and social adjustment usually designated as intangibles. These are the factors that defy appraisal or diagnosis by means of ordinary ability and achievement tests. Measurements of capacity, skill, and achievement, important as they are, do not constitute a complete picture of a functioning personality.

California Test of Personality - Means & Standard Deviations of T Scores on California Test of Personality Variables for Both Groups

Variables	Inferior Readers		Superior Readers	
	Mean	SD	Mean	SD
Personal Adjustment:				
Self-Reliance	46.90	6.77	52.28	7.27
Sense of Personal Worth	50.49	8.30	57.33	7.36
Sense of Personal Freedom	46.17	7.57	53.17	6.88
Feeling of Belonging	47.41	8.81	56.50	6.79
Withdrawing Tendencies (Freedom from)	51.32	7.84	59.38	6.96
Nervous Symptoms (Freedom from)	49.44	11.43	55.17	7.61
Social Adjustment:				
Social Standards	43.95	8.98	53.83	7.36
Social Skills	49.17	9.84	54.36	10.19
Anti-Social Tendencies (Freedom from)	44.80	10.21	52.14	9.44
Family Relations	45.12	8.47	52.52	6.83
School Relations	50.05	9.79	57.71	7.14
Community Relations	43.07	8.72	50.43	5.22
Total Adjustment:				

California Test of Personality

Reliability:	Prim.	Elem.	Inter.
Components:	r	r	r
Personal Adjustment	.83	.93	.93
A. Self-Reliance	.73	.64	.70
B. Sense of Personal Worth	.82	.79	.75
C. Sense of Personal Freedom	.73	.79	.92
D. Feeling of Belonging	.70	.77	.97
E. Withdrawing Tendencies (Fdm.)	.71	.83	.83
F. Nervous Symptoms (Fdm.)	.87	.82	.82
Social Adjustment	.80	.92	.94
A. Social Standards	.51	.59	.94
B. Social Skills	.70	.73	.75
C. Anti-Social Tendencies (Fdm.)	.82	.77	.86
D. Family Relations	.82	.77	.92
E. School Relations	.70	.78	.86
F. Community Relations	.78	.79	.87
Total Adjustment	.88	.94	.96

Reliability Components:	Sec.	Adult
	r	r
Personal Adjustment	.90	.93
A. Self-Reliance	.70	.81
B. Sense of Personal Worth	.77	.66
C. Sense of Personal Freedom	.84	.87
D. Feeling of Belonging	.91	.87
E. Withdrawing Tendencies (Fdm.)	.86	.86
F. Nervous Symptoms (Fdm.)	.82	.81
Social Adjustment	.89	.93
A. Social Standards	.84	.76
B. Social Skills	.86	.70
C. Anti-Social Tendencies (Fdm.)	.84	.75
D. Family Relations	.91	.91
E. School Relations	.73	.84
F. Community Relations	.78	.77
Total Adjustment	.93	.95

California Test of Personality

Validity:	Content & Construct	Concurrent & Predictive
Personal Adjustment	Very Good	Poor
A. Self-Reliance	Good	Poor
B. Sense of Personal Worth	Good	Poor
C. Sense of Personal Freedom	Good	Poor
D. Feeling of Belonging	Good	Poor
E. Withdrawing Tendencies	Good	Poor
F. Nervous Symptoms	Very Good	Poor
Social Adjustment	Very Good	Poor
A. Social Standards	Good	Poor
B. Social Skills	Good	Poor
C. Anti-Social Tendencies	Good	Poor
D. Family Relations	Good	Poor
E. School Relations	Good	Poor
F. Community Relations	Good	Poor
Total Adjustment		

California Test of Personality (Critique)

See Also:

Norman, R.D. and Daley, M.F. "The Comparative Personality Adjustment of Superior and Inferior Readers." Journal of Educational Psychology, 1959, 50(1), 31-36.

Columbia Mental Maturity Scale (1 Form)

Purpose: To estimate the intellectual ability of children

Type of Test: Individual intelligence

Range: 3-10 years (mental age)

Time for Administration: 15-20 minutes

Cost: $34.00 per kit, including 100 record blanks

Subtests: None

Scores: Single scaled IQ; Mean = 100, S.D. = 15

Nature of Test:

The Scale includes 100 items, each printed on a card 6 by 19 inches, bearing from 3 to 5 drawings printed in various colors on white stock, or in black on colored stock. The cards are graded in difficulty from the simple to the more complex.

The child is required to select, after he has looked at a card for about 20 seconds, the drawing that is different from the others. Responses are recorded on an 8 1/2" x 11" Individual Record Blank. The child may reply by pointing or nodding his head at one of the drawings on each of these large, easily handled cards. The maximum possible score is 100.

Columbia Mental Maturity - Means, Standard Deviations

Columbia Mental Maturity Scale IQ's for Separate Age Groups in Standardization Group

Age	Number of Cases	Columbia IQ Mean	Columbia IQ SD
3-0 to 3-11	89	113.7	20.0
4-0 to 4-11	139	106.1	21.0
5-0 to 5-11	113	102.8	17.7
6-0 to 6-11	124	111.3	23.1
7-0 to 7-11	125	106.4	22.1
8-0 to 8-11	127	99.3	23.2
9-0 to 9-11	82	104.6	26.0
10-0 to 10-11	79	99.9	26.6
11-0 to 11-11	51	102.0	25.9
12-0 to 12-11	28	100.4	25.0

Columbia Mental Maturity Scale for Selected Age Groups

Reliability:

Age	r
4	.89
5	.91
9	.91
10	.92

Validity: .45-.55

Deutsch SES Index

The index of cultural deprivation (C.D.) includes the following three components:

1. The father's occupation on a 4-point scale (or the mother's occupation if no father is in the home).

1 point - unskilled or unemployed
2 points - semiskilled
3 points - skilled
4 points - professional

2. Number of years of education completed by the parents (an average of the two, or the mother's education only if no father is in the home).

3. Density in the home is defined as the number of rooms divided by the number of people living in the home.

> In the number of rooms are included the kitchen and the bathroom. A shared bathroom is counted as half a room.

Occupation and education are given a full weight, but density is given a 1/2 weight. Each component is divided by its standard deviation to equate the variability of all components. In other words, the C.D. rating is the sum of three *z* scores, except that density is given a 1/2 weight.

The above gives a definitional formula. In actuality, the following computation formula is used:

$$1/2\ (\text{Education}) + 2\ (\text{Occupation}) + 2\ \frac{\text{Rooms}}{\text{People}}$$

Reflected in the computational formula are the following approximate standard deviations from the original Perry School population: 2 for education, 1/2 for occupation, and 1/4 for density.*

An example from an actual case may best clarify the computational formula. If pertinent data are:

Father's occupation: Unskilled factory work (1 point)
Mother's education: 11 years
Father's education: 7 years
Number of rooms: 6
Number of people living in home: 9

$$\text{C.D.} = 1/2(9) + 2(1) + 2\left(\frac{6}{9}\right) = 8.3$$

---

*A score of 10 or below makes the family a low SES family and thus "culturally deprived."

Film Test of Visual Perception

(1 Form)

Purpose: To test the perceptual abilities of children

Type of Test: Individual visual-perception

Range: 6-18 years (may also be applicable for younger children)

Time for Administration: 80 minutes

Subtests:
- Spatial Orientation of Objects
- Form Identification
- Moving Slot
- Figural Memory Span
- Temporal Memory Span I
- Pathfinder
- Embedded Figures
- Successive Figures
- Driving Test
- Temporal Memory Span II

Scores: One for each subtest

Film Test of Visual Perception

Subtest:	Mean	Standard Deviation
Spatial Orientation of Objects	12.7	2.79
Form Identification	15.8	1.78
Moving Slot	12.7	1.72
Figural Memory Span	7.5	2.06
Temporal Memory Span I	8.8	1.76
Pathfinder	12.2	2.79
Embedded Figures	12.6	2.64
Successive Figures	11.1	3.13
Temporal Memory Span II	7.3	1.97
Driving Test	8.5	3.46

Film Test of Visual Perception

Reliability:	Spatial Orientation of Objects	.76
	Form Identification	.32
	Moving Slot	.40
	Figural Memory Span	.50
	Temporal Memory Span	.62
	Pathfinder	.64
	Embedded Figures	.73
	Successive Figures	.67
	Temporal Memory Span II	.66
	Driving Test	.83

Validity: Low correlations with standardized intelligence and achievement tests.

Frostig Developmental Test of Visual Perception (1 Form)

Purpose: To evaluate the perceptual skills of young children

Type of Test: Indivudal and small group visual-perception

Range: 5-8 years

Time for Administration: Individual, 30-40 minutes
Group, less than 1 hour

Cost: $38.50 per 100 test booklets; $3.00 per manual; $1.50 per set of demonstration cards; $.50 per set of 3 score keys

Subtests:
- Eye Motor Coordination
- Constancy of Shape
- Spatial Relationships
- Figure Ground
- Position in Space

Scores: One for each subtest, overall perceptual quotient

Scale Score: Perceptual age $\frac{\text{(Raw Scores)}}{\text{Chronological Age}}$ X 10

Perceptual Quotient (under 5) sum of scale scores on 4 subtests + 10
Perceptual Quotient (5-10) sum of scale scores on 5 subtests
Perceptual Quotient over 10 (not used)

Nature of Test:

In many years of intensive work with children showing learning difficulties, the frequency with which limitation or impairment of ability to perform different visual perceptual tasks was observed. In many cases, the perceptual handicaps appeared to be closely related to brain damage, in others to emotional disturbances, and in many merely to a developmental lag. Studying visual perception in young children also seemed to confirm the hypotheses offered by other investigators that what is normally referred to as visual perception actually consists of a number of different functions or skills which are relatively independent of one another.

The Developmental Test of Visual Perception seeks to measure five operationally-defined perceptual skills, as follows:

Eye-Motor Coordination - a test of eye-hand coordination involving the drawing of continuous straight, curved, or angled lines between boundaries of various width, or from point to point without guide lines.

Figure-Ground - a test involving shifts in perception of figures against increasingly complex grounds. Intersecting and "hidden" geometric forms are used.

Constancy of Shape - a test involving the recognition of certain geometric figures presented in a variety of sizes, shadings, textures, and positions in space, and their discrimination from similar geometric figures. Circles, squares, rectangles, ellipses and parallelograms are used.

Position in Space - a test involving the discrimination of reversals and rotations of figures presented in series. Schematic drawings representing common objects are used.

Spatial Relationships - a test involving the analysis of simple forms and patterns. These consist of lines of various lengths and angles which the child is required to copy, using dots as guide points.

The specific subtests were selected because clinical observation pointed to their seeming relevance to performance in nursery school, kindergarten, and the elementary years.

The Developmental Test of Visual Perception can be used either as a screening device for nursery school, kindergarten, and first grade children, or as a clinical evaluative instrument for older children who suffer from learning difficulties.

Frostig Developmental Test of Visual Perception

Means, Standard Deviations for Each Subtest by Half-Year Age Levels

Age (Subtest I)	Mean	S.D.	Age (Subtest III)	Mean	S.D.
5-5 1/2	10.11	2.24	5-5 1/2	9.69	2.71
5 1/2-6	9.78	2.38	5 1/2-6	9.56	2.68
6-6 1/2	9.98	2.31	6-6 1/2	10.40	2.19
6 1/2-7	9.93	2.48	6 1/2-7	9.78	2.46
7-7 1/2	9.90	2.27	7-7 1/2	10.20	2.30
7 1/2-8	10.36	2.50	7 1/2-8	10.07	1.74
(Subtest III)					
5-5 1/2	10.19	2.50	5-5 1/2	10.00	2.42
5 1/2-6	10.21	2.03	5 1/2-6	9.92	1.74
6-6 1/2	10.38	1.98	6-6 1/2	10.31	2.22
6 1/2-7	10.09	2.37	6 1/2-7	10.15	1.87
7-7 1/2	10.14	1.52	7-7 1/2	9.97	1.90
7 1/2-8	9.69	1.36	7 1/2-8	9.76	1.50
(Subtest V)					
5-5 1/2	9.84	2.16			
5 1/2-6	9.95	2.06			
6-6 1/2	10.00	1.98			
6 1/2-7	10.36	1.69			
7-7 1/2	10.04	1.35			
7 1/2-8	9.96	0.99			

Frostig Developmental Test of Visual Perception

Reliability: Split-Half Reliability Correlation Coefficients

Age Group	N	Subtest I	II	III	IV	V	Total Score
5-6(60-71 mo)	364	.59	.93	.67	.70	.85	.89
6-7(72-83 mo)	441	.60	.91	.72	.59	.84	.88
7-8(84-95 mo)	379	.59	.91	.77	.48	.74	.82
8-9(96-107 mo)	275	.60	.96	.72	.35	.65	.78

Validity:

Preschool	Content & Construct	Concurrent & Predictive
I. Eye-Motor Coordination	Very Good	Not Reported
II. Figure-Ground	Good	Not Reported
III. Constancy of Shape	Good	Not Reported
IV. Position in Space	Good	Not Reported
V. Spatial Relationships	Good	Not Reported
Total-Perceptual Quotient		
Kindergarten		
I. Eye-Motor Coordination	Very Good	Not Reported
II. Figure-Ground	Good	Not Reported
III. Constancy of Shape	Good	Not Reported
IV. Position in Space	Good	Not Reported
V. Spatial Relationships	Good	Not Reported
Total-Perceptual Quotient		
Grade 1		
I. Eye-Motor Coordination	Very Good	Fair
II. Figure-Ground	Very Good	Fair
III. Constancy of Shape	Good	Fair
IV. Position in Space	Good	Fair
V. Spatial Relationships	Very Good	Fair
Total-Perceptual Quotient	Very Good	Fair

Frostig Developmental Test of Visual Perception

See Also:

Jacobs, J.N. "An Evaluation of the Frostig Visual-Perceptual Training Program." Educational Leadership, 1968, 25(1), 332-340.

Olson, A.V. and Johnson, C.I. "Structure and Predictive Validity of the Frostig Developmental Test of Visual Perception in Grades One and Three." The Journal of Special Education, 1970, 4(1), 49-52.

Gates-MacGinitie Readiness Skills Test

(1 Form)

Purpose: To measure reading readiness

Type of Test: Group reading

Range: Grades K-1

Time for Administration: 120 minutes

Cost: $2.25 per 35 tests

Subtests:
- Listening Comprehension
- Auditory Discrimination
- Visual Discrimination
- Following Directions
- Letter Recognition
- Visual-Motor Coordination
- Auditory Blending
- Word Recognition

Score: Raw; one for each subtest

Nature of Test:

The test consists of a group of subtests, each of which measures a skill which is considered important for a child to have mastered after his first year of formal education. The extent to which he has mastered these skills is assumed to have a bearing on his success in school from this point on.

Gates-MacGinitie Readiness Skills Test

		KINDERGARTEN		
		Raw Score Mean	Raw Score Standard Deviation	Median KR 20 Reliability Coefficient
I.	Listening Comprehension	13.29	4.09	72
II.	Auditory Discrimination	18.75	3.43	73
III.	Visual Discrimination	15.55	6.49	87
IV.	Following Directions	10.10	3.06	70
V.	Letter Recognition	11.51	5.32	85
VI.	Visual-Motor Coordination	11.65	4.03	64
VII.	Auditory Blending	9.44	3.05	63
VIII.	Word Recognition	9.81	4.33	69

		FIRST GRADE		
		Raw Score Mean	Raw Score Standard Deviation	Median KR 20 Reliability Coefficient
I.	Listening Comprehension	13.85	3.99	69
II.	Auditory Discrimination	18.67	3.39	72
III.	Visual Discrimination	17.05	6.26	86
IV.	Following Directions	9.98	2.71	69
V.	Letter Recognition	11.61	5.37	85
VI.	Visual-Motor Coordination	11.25	4.32	67
VII.	Auditory Blending	10.04	2.97	65
VIII.	Word Recognition	11.06	5.07	75

Gates-MacGinitie Readiness Skills Tests (Critique)

See Also:

Olson, A.V. and Johnson, C.I. "Structure and Predictive Validity of the Frostig Developmental Test of Visual Perception in Grades One and Three." *The Journal of Special Education*, 1970, *4*91), 49-52.

Goodenough Draw-A-Man Test (1 Form)

Purpose: To test intelligence with a non-verbal instrument

Type: Individual intelligence

Range: 4-12 years

Time for Administration: 10 minutes

Cost: $1.50 per 35 tests, $3.25 per manual

Subtests: None

Scores: Single raw, intelligence score

Nature of Test:

The child is instructed to draw the best picture of a man which he is capable of drawing. This is then scored according to an objective set of criteria.

Reliability: .77
Validity: .74

Goodenough Draw-a-Man - Distribution of Total Scores by Age and School - Total Cases

Age	4	5	6	7	8	9	10	11	12
Mean	6.9	10.2	13.9	18.5	22.5	26.2	30.6	33.0	35.2
S.D.	3.6	4.1	4.4	4.7	5.4	7.0	6.6	6.6	6.2

Goodenough Draw-A-Man Test (Critique)

See Also:

Britton, J. "Influence of Social Class Upon Peformance on the Draw-A-Man Test." The Journal of Educational Psychology, 1954, 45(1), 44-51.

Illinois Test of Psycholinguistic Abilities (ITPA) (1 Form)

Purpose: To identify "psycholinguistic abilities and disabilities in children."

Type of Test: Individual psycholinguistic

Range: 2.5-9 years

Time for Administration: 45-60 minutes

Cost: $32.00 per kit; $3.75 per 25 records; $3.50 per manual

Subtests:
Auditory Decoding
Auditory Vocal Association
Auditory Vocal Automatic
Auditory Vocal Sequencing
Vocal Encoding
Visual Decoding
Visual Motor Association
Visual Motor Sequencing
Motor Encoding

Scores: Profile of nine language skills (from subtests) and (total language age)

Nature of Test:

The psycholinguistic model on which the ITPA is based attempts to relate those functions whereby the intentions of one individual are transmitted (verbally or nonverbally) to another individual, and reciprocally, functions whereby the environment or the intentions of another individual are received and interpreted.

The adoption of this theoretical model for the battery served two purposes: (a) it was a parsimonious device by which the essential features of communication were delineated so that their relationships were specified; (b) it provided a framework within which to observe and evaluate a child, making it possible to verify and elaborate on test results and to suggest remedial measures.

The present model postulates three dimensions of cognitive abilities:

1. Channels of Communication. These are the routes through which the content of communication flows. Included here are the modalities through which sense impressions are received and the forms of expression through which a response is made. The channels may include various combinations of sensory input and response output. The major modes of input are auditory and visual; those of putput are vocal and motor. Due to practical limitation, the ITPA incorporates only the auditory-vocal and the visual-motor channels. These channels were selected as being most relevant for the developmental level of subjects in the test's age range.
2. Psycholinguistic Processes. In analyzing behavior which occurs in the acquisition and use of language, three main processes are considered: (a) the receptive process, that is, that ability necessary to recognize and/or understand what is seen or heard; (b) the expressive process, that is, those skills necessary to express ideas or to respond either vocally or by gesture or movement; (c) an organizing process which involves the internal manipulation of percepts, concepts, and linguistic symbols. It is a central mediating process elicited by the receptive process and preceding the expressive process.

Illinois Test of Psycholinguistic Abilities (ITPA)

3. Level of Organization. The degree to which habits of communication are organized within the individual determines the level of functioning. Two levels are postulated in the clinical model of the ITPA: (a) the representational level, which requires the more complex mediating process of utilizing symbols which carry the meaning of an object; (b) the automatic level in which the individual's habits of functioning are less voluntary but highly organized and integrated. The automatic chain of responses of the latter level is involved in such activities as visual and auditory closure, speed of perception, ability to reproduce a sequence seen or heard, rote learning, synthesizing isolated sounds into a word, and utilizing the redundancies of experience.

Psycholinguistic Age Norms for the 12 ITPA Subtests

Raw Score	Aud.Recept. (Decoding)	Visual Recept. (Decoding)	Aud.-Voc. Assoc.	Vis.-Motor Assoc.	Verbal(Voc) Express. Encoding	Manual(Motor Express. Encoding)
0	2-1		2-4	2-4	2-0	2-0
1	2-2	2-1	2-6	2-6	2-2	2-2
2	2-4	2-4	2-8	2-8	2-5	2-4
3	2-6	2-7	2-10	2-10	2-7	2-6
4	2-8	2-10	3-0	3-0	2-9	2-8
5	2-10	3-1	3-3	3-2	2-10	2-10
6	2-11	3-4	3-5	3-4	3-1	3-0
7	3-1	3-7	3-7	3-6	3-4	3-2
8	3-3	3-10	3-9	3-8	3-8	3-4
9	3-5	4-1	3-11	3-10	3-10	3-6
10	3-6	4-4	4-1	4-0	4-0	3-8
11	3-8	4-7	4-3	4-2	4-3	3-10
12	3-10	4-10	4-5	4-4	4-6	4-0
13	4-0	5-0	4-7	4-6	4-8	4-4
14	4-1	5-2	4-9	4-8	4-10	4-6
15	4-3	5-5	4-11	4-10	4-0	4-10
16	4-5	5-7	5-1	5-0	5-2	5-0
17	4-7	5-10	5-3	5-3	5-4	5-3
18	4-10	6-0	5-5	5-6	5-6	5-6
19	5-0	6-2	5-7	5-9	5-8	5-10
20	5-2	6-5	5-9	6-0	5-10	6-1
21	5-4	6-7	6-0	6-3	6-0	6-5
22	5-6	6-10	6-2	6-6	6-2	6-9
23	5-8	7-1	6-6	6-10	6-4	7-2
24	5-10	7-4	6-9	7-2	6-6	7-6
25	6-0	7-9	7-0	7-7	6-8	7-11
26	6-3	8-4	7-3	8-0	6-10	8-4
27	6-5	8-10	7-8	8-5	7-0	8-8
28	6-8	9-3	7-11	8-11	7-3	9-2
29	6-10	9-10	8-3	9-4	7-5	9-10
30	7-0	10-4	8-6	9-10	7-8	10-4
31	7-3	10-10	8-10	10-3	7-10	
32	7-6		9-2		8-1	
33	7-9		9-5		8-4	

(continued)

Psycholinguistic Age Norms for the 12 ITPA Subtests

Raw Score	Aud. Recept. (Decoding)	Visual Recept. (Decoding)	Aud.-Voc. Assoc.	Vis.-Motor Assoc.	Verbal(Voc) Express. Encoding	Manual(Motor Express. Encoding)
34	8-0		9-9			
35	8-4		10-1			
36	8-7		10-6			
37	8-10		10-11			
38	9-2					
39	9-6					
40	9-10					
41	10-2					

Psycholinguistic Age Norms for the 12 ITPA Subtests (continued)

Raw Score	Vis.-Motor Assoc.	Verbal(Voc) Express. Encoding)	Manual(Motor Express. Encoding)	Grammatic Clos. (Aud. Vocal Automatic)	Visual Clos.	Aud. Sequen. Memory(Aud.Voc. Sequencing)
0	2-4	2-0				
1	2-6	2-2	2-0	2-2		
2	2-8	2-5	2-2	2-6		
3	2-10	2-7	2-4	2-10	2-2	2-0
4	3-0	2-9	2-6	3-3	2-6	2-2
5	3-2	2-10	2-8	3-7	2-11	2-5
6	3-4	3-1	2-10	3-10	3-3	2-7
7	3-6	3-4	3-0	4-2	3-6	2-10
8	3-8	3-8	3-2	4-5	3-10	3-0
9	3-10	3-10	3-4	4-8	4-0	3-2
10	4-0	4-0	3-6	4-10	4-4	3-5
11	4-2	4-3	3-8	5-0	4-6	3-7
12	4-4	4-6	3-10	5-2	4-8	3-10
13	4-6	4-8	4-0	5-4	4-10	4-0
14	4-8	4-10	4-4	5-6	5-0	4-2
15	4-10	4-0	4-6	5-8	5-3	4-5
16	5-0	5-2	4-10	5-10	5-5	4-8
17	5-3	5-4	5-0	6-0	5-8	4-10
18	5-6	5-6	5-3	6-2	5-10	5-0
19	5-9	5-8	5-6	6-5	6-1	5-3
20	6-0	5-10	5-10	6-8	6-4	5-6
21	6-3	6-0	6-1	7-0	6-6	5-8
22	6-6	6-2	6-5	7-3	6-9	6-0
23	6-10	6-4	6-9	7-7	7-0	6-3
24	7-2	6-6	7-2	7-11	7-2	6-6
25	7-7	6-8	7-6	8-2	7-6	6-10
26	8-0	6-10	7-11	8-6	7-9	7-2
27	8-5	7-0	8-4	8-10	8-0	7-7
28	8-11	7-3	8-8	9-2	8-3	7-11
29	9-4	7-5	9-2	9-8	8-6	8-4
30	9-10	7-8	9-10	10-4	8-9	8-8
31	10-3	7-10	10-4		9-0	9-2
32		8-1			9-4	9-10
33		8-4			9-10	10-3
34		8-7			10-6	
35		8-10				
36		9-1				
37		9-4				
38		9-10				
39		10-2				
40		10-5				
41		10-11				

Psycholinguistic Age Norms for the 12 ITPA Subtests (continued)

Raw Score	Vis. Sequen. Memory(Vis.Motor Sequencing)	Aud. Clos.	Sound Blending
		Supplemental Tests of Grammatical Clos.	
0		2-0	
1	2-1	2-4	
2	2-4	2-7	2-4
3	2-7	2-10	2-10
4	2-10	3-1	3-4
5	3-1	3-4	3-8
6	3-4	3-7	4-2
7	3-7	3-10	4-6
8	3-10	4-0	5-0
9	4-1	4-2	5-3
10	4-4	4-4	5-6
11	4-7	4-6	5-10
12	4-10	4-8	6-2
13	5-1	4-11	6-5
14	5-4	5-1	6-8
15	5-7	5-3	6-11
16	5-10	5-6	7-1
17	6-2	5-9	7-4
18	6-6	6-1	7-7
19	6-10	6-5	7-10
20	7-3	6-9	8-2
21	7-10	7-3	8-7
22	8-4	7-11	
23	8-9	8-5	
24	10-5	9-4	
25		10-0	
26			
27			
28			
29			
30			
31			
32			
33			

Illinois Test of Psycholinguistic Abilities (ITPA)

Reliability	Median Reliability	Range
Auditory-Vocal Automatic	.78	.62-.90
Visual Decoding	.76	.45-.90
Motor Encoding	.76	.60-.86
Auditory-Vocal Association	.72	.51-.83
Visual Motor Sequential	.70	.39-.84
Vocal Encoding	.72	.48-.84
Auditory-Vocal Sequencing	.80	.72-.89
Visual Motor Association	.76	.55-.89
Auditory Decoding	.80	.58-.91
Validity		
Concurrent	.15	.03-.65
Predictive	.23	-.19-.53

Illinois Test of Psycholinguistic Abilities (Critiques)

See Also:

Hirshoren, A. "A Comparison of the Predictive Validity of the Revised Stanford-Binet Intelligence Scale and the Illinois Test of Psycholinguistic Abilities," 1969, 35(3), 517-521.

Kirk, S.A. and McCarthy, J.J. "The Illinois Test of Psycholinguistic Abilities: An Approach to Differential Diagnosis." American Journal of Mental Deficiency, 1961, 66(3), 399-412.

Mueller, M.W. "Validity of Six Tests of Ability with Educable Mental Retardates." Journal of School Psychology, 1968, 6(2), 136-146.

Weener, P., Barritt, L.S., and Semmel, M.I. "A Critical Evaluation of the Illinois Test of Psycholinguistic Abilities." Exceptional Children, 1967, 33(2), 373-380.

Leiter International Performance Scale (1 Form)

Purpose: To assess intelligence (has no spoken instructions)

Type of Test: Individual intelligence

Range: 2-18 years

Time for Administration: Untimed (usually 1 hour)

Cost: $350.00 per set (includes test materials, 100 record blanks, carry case and manual)

Subtests:
- Matching
- Copying
- Picture Completion
- Number Estimation
- Analogies
- Recognition of Age
- Classification of Animals According to Habitat
- Series Completion
- Spatial Relations
- Footprint Recognition
- Similarities
- Memory for a Series

Scores: Single IQ, scaled

Mean = 100   Standard Deviation = 15

Nature of Test:

The Leiter Scale is designed to cover a wide range of functions, similar to those found in verbal scales. A distinctive feature is the absence of spoken instructions, thereby requiring no language. It is appropriate especially for handicapped children and those children for whom culture bias might otherwise be a factor.

Reliability: .90

Validity: Good

Lorge-Thorndike Intelligence Test (2 Forms)

Purpose: To test abstract intelligence, i.e., the ability to work with ideas and relationships among ideas.

Type of Test: Group intelligence

Range: Grades K-12

Time for Administration: 20-34 minutes

Cost: $3.45 per 35 tests, $.45 per manual, $.24 per Scoring stencil, $7.50 per 100 answer sheets

Subtests: Primary Battery (Level 1)

Oral Vocabulary
Cross-out (the one that doesn't belong)
Pairing

Verbal Battery (Levels 2-5)

Word knowledge
Sentence Completion
Verbal Classification
Verbal Analogies
Arithmetic Reasoning

Non-Verbal Battery (Levels 2-5)

Figure Analogies
Figure Classification
Number Series

Levels:
1 - Kindergarten and Grade 1
2 - Grades 2-3
3 - Grades 4-6
4 - Grades 7-9
5 - Grades 10-12

Scores: Scaled; verbal, non-verbal IQ's

Nature of Test:

The tests are based on the premise that most abstract ideas with which the school child or the working adult deals are expressed in verbal symbols, so much so that verbal symbols are the appropriate medium for the testing of abstract intelligence. Nevertheless, they take account of the fact that for some--the young, the poorly educated, or the poor reader--printed words may constitute an inadequate basis for appraising an individual's abilities. Consequently, a parallel set of nonverbal tests is provided to accompany the basic verbal series.

The tests are available in five levels. The first two levels are called the Primary Battery. The items contain pictures of familiar common objects or of simple geometrical figures. For the three higher levels, both a Verbal and Nonverbal Battery are provided.

The Verbal Battery is made up of subtests each of which uses the verbal medium. Of the different subtests, one also involves numerical tasks.

Experience over the years with tasks of these five types has indicated that such tasks provide a good and useful measure of ability to deal with abstractions presented in verbal form and that, since this type of ability is related to academic achievement, they provide a good index of scholastic aptitude.

The Nonverbal Battery is entirely pictorial, diagrammatic, numerical. The subtests are Figure Analogies, Figure Classification and Number Series. For the average child, these tests will not predict school performance quite so well as scores based upon the Verbal Battery. However, they permit an appraisal of abstract intelligence which is not influenced by specific disability in reading. Use of both the Verbal and Nonverbal Batteries is recommended for the appraisal of children in schools, because the discrepancies between performance on the two tests may reveal significant facts about reading achievement, school progress, or vocational prospects.

Means and Standard Deviations:

Test Level	Grade	Verbal Raw Score Mean	Verbal Raw Score S.D.
1	kg		
1	1		
2	2		
2	3		
3	4	46.57	14.65
3	5	58.15	13.92
3	6	63.80	13.16
4	7	45.30	13.34
4	8	51.37	13.33
4	9	56.71	12.91
5	10	43.67	11.46
5	11	49.30	12.79
5	12	51.68	12.22

Mean = 100
Standard Deviation = 16

Reliability:

Battery & Level	Grade Level	Reliability
Primary		
Level 1	K	.916
Level 1	1	.810
Level 2	2	.761
Level 2		
Nonverbal	3	.85
Verbal	3	.92
Level 3		
Nonverbal	4	.80
Verbal	4	.92
Level 3		
Nonverbal	5	.814
Verbal	5	.896
Level 3	6	----
Level 4	7	----
Level 4		
Nonverbal	8	.776
Verbal	8	.865

Metropolitan Achievement Test (2 Forms except for Primary I(1))

Purpose: To measure "achievement in the important skill and content areas of the elementary and junior high school curriculum"

Type of Test: Group achievement

Range: Grades 1.5-12

Time for Administration: Varies from 85-316 minutes

Subject Tests, Number of Items and Working Time

Subtest	Primary I Items	Primary I Time	Primary II Items	Primary II Time	Elemen. Items	Elemen. Time	Intermed. Items	Intermed. Time	Advanced Items	Advanced Time
Word Knowledge	35	15	37	18	50	15	55	14	55	14
Word Discrimination	35	12	35	12	36	12				
Reading	45	35	51	35	44	22	44	25	45	25
Spelling			30	10	40	20	55	17	55	17
Arith:Concepts & Skills	63	23								
Prob. Solving & Concepts			42	15	35	26	48	35	48	35
Computation			30	10	47	30	48	38	45	35
Language:Usage					24	10	35	13	24	8
Punctuation & Capitalization					36	12	36	9	38	7
Parts of Speech-Grammar							10	4	20	10
Kinds of Sent.									10	4
Language Study Skills							28	16	28	16
Social Studies Information							60	20	60	20
Social Studies Study Skills							29	26	39	36
Science							55	20	55	20

Cost: $6.25 per 35 tests, $1.20 per manual, $2.00 per 35 cummulative record cards.

Scores: Raw; one for each subtest.

Nature of Test:

Metropolitan Achievement Tests comprise a coordinated series of measures of achievement. At each level Metropolitan includes tests covering the most important knowledge or skill areas in the grade or grades for which that level is intended. The tests in each battery, the number of questions in each test and the working time required are summarized in the chart above. The various subtests yield comparable results so that the teacher may readily infer particular strengths and weaknesses of a pupil or class.

Subtests: Primary I (Grade 1.5-1.9)

Word Knowledge
Word Discrimination
Reading
Arith:Concepts & Skills

Primary II (Grade 2)

Word Knowledge
Word Discrimination
Spelling
Reading
Problem Solving & Concepts
Computation

Elementary (Grades 3-4)

Word Knowledge
Word Discrimination
Spelling
Language Usage
Reading
Problem Solving & Concepts
Computation
Punct. & Capitalization

Intermediate (Grades 5-6)

Word Knowledge
Spelling
Language Usage
Parts of Speech-Grammar
Language Study Skills
Social Studies Study Skills
Reading
Problem Solving & Concepts
Computation
Punct. & Capitalization
Soc. Studies Information
Science

Advanced (Grades 7-9)

Word Knowledge
Spelling
Language Usage
Parts of Speech-Grammar
Kinds of Sentences
Social Studies Information
Science
Reading
Problem Solving & Concepts
Computation
Punct. & Capitalization
Language Study Skills
Social Studies Skills

High School Battery (Grades 9-12)

Reading
Spelling
Language
Language Study Skills
Social Studies Study Skills
Social Studies Vocabulary
Social Studies Information
Math. Computation & Concepts
Math. Analy. & Prob. Solving
Scient.Concepts & Understand.
Scientific Information

Subtests: Grade 1 (Primary I)	Means	SD
Reading:Word Pictures (Knowledge)	24.81	10.89
Reading:Word Recognition (Reading)	17.88	5.67
Reading:Word Meaning (Discrimination)	14.84	8.88
Numbers (Concepts & Skills)	47.52	12.82
Grade 2 (Primary II)		
Reading	33.36	11.83
Word Meaning (Word Discrimination)	48.82	22.48
Arith. Fundamentals (Computation)	44.88	12.77
Arith. Problems (Prob. Solving & Concepts)	11.78	8.40
Spelling	15.68	6.28

Subtests:		Means	SD
	Elementary (Grade 4.1)		
	Word Knowledge	33.0	11.55
	Reading	26.4	9.37
	Spelling	25.6	11.36
	Math. Computation	24.2	7.40
	Math. Concepts	23.8	8.07
	Intermediate (Grade 5.1)		
	Word Knowledge	26.0	10.09
	Reading	22.5	9.73
	Spelling	22.8	9.12
	Math. Computation	17.1	6.69
	Math. Concepts	18.3	7.60
	Science	38.1	15.13
	Social Studies	42.4	17.22
	Intermediate (Grade 6.1)		
	Word Knowledge	30.8	10.37
	Reading	26.2	10.46
	Spelling	28.6	9.83
	Math. Computation	23.3	7.83
	Math. Concepts	22.7	8.11
	Science	49.6	15.70
	Social Studies	54.1	19.12

Metropolitan Achievement Tests

Reliability:

Primary 1 Battery (Last half of Grade 1)

Test:	Range	Mdn.
Word Knowledge	.86-.91	.90
Word Discrimination	.81-.83	.87
Reading	.88-.94	.92
Arithmetic		
Concepts (items 1-39)	.81-.89	.85
Skills (items 40-63)	.94-.95	.95
Total (items 1-63)	.91-.95	.93

Primary II Battery (Grade 2)

Test:	Range	Mdn.
Word Knowledge	.86-.96	.93
Word Discrimination	.86-.92	.88
Reading	.94-.95	.94
Spelling	.92-.95	.93
Arithmetic:		
Part A Concepts & Problem	.80-.87	.86
Solving	.74-.88	.80
Part B Computation	.85-.92	.91
Total (Parts A & B)		

Metropolitan Achievement Tests

Reliability:

Elementary Battery (Grades 3-4)

Test:	Range	Mdn.
Word Knowledge	.79-.95	.93
Word Discrimination	.88-.93	.92
Reading	.86-.91	.90
Spelling	.94-.96	.95
Language:		
Part A Usage	.74-.84	.80
Part B Punctuation & Capitalization	.61-.81	.78
Total (Parts A & B)	.79-.87	.84
Arith. Computation	.91-.93	.92
Arith. Problem Solving & Concepts	.86-.91	.88

Intermediate Battery (Grades 5-6)

Test:	Range	Mdn.
Word Knowledge	.88-.95	.94
Reading	.89-.92	.90
Spelling	.91-.96	.92
Language:		
Part A Usage	.78-.84	.81
Part B Parts of Speech	.64-.77	.72
Part C Punctuation & Capitalization	.80-.88	.83
Total (Parts A-C)	.87-.91	.89
Language Study Skills	.76-.85	.79
Arith. Computation	.82-.94	.88
Arith. Problem Solving & Concepts	.90-.95	.92
Social Studies Information	.86-.87	.87
Social Studies Study Skills	.64-.77	.73
Science	.87-.90	.89

Advanced Battery (Grades 7-9)

Test:	Range
Word Knowledge	.91-.94
Reading	.88-.92
Spelling	.90-.93
Language:	
Part A Usage	.47-.81
Part B Punctuation & Capitalization	.63-.77
Part C Kinds of Sentences	.53-.67
Part D Parts of Speech	.81-.86
Total (Parts A-D)	.88-.90
Language Study Skills	.79-.84
Arith. Computation	.87-.95
Arith. Problem Solving & Concepts	.89-.94
Social Studies Information	.86-.91
Social Studies Study Skills	.82-.86
Science	.79-.88

Metropolitan Achievement Tests

Validity:	Content & Construct	Concurrent & Predictive
	Generally Very Good	Not Reported

Metropolitan Achievement Tests (Critiques)

See Also:

Eagle, N. and Harris, A.S. "Interaction of Race and Test on Reading Performance Scores." *Journal of Educational Measurement*, 1966, 6(3), 131-135.

Metropolitan Readiness Tests (2 Forms)

Purpose: To measure the traits and achievements of school beginners that contribute to their readiness for first grade instruction.

Type of Test: Group Readiness

Range: End of kindergarten or first grade

Time for Administration: 60 minutes

Cost: $2.35 per 25 tests

Subtests:
- Word Meaning
- Information
- Numbers
- Drawing a Man (optional)
- Sentences
- Matching
- Copying

Scores: Raw: one for each subtest, and total score (sum of subtest scores)

Nature of Test:

Metropolitan Readiness Tests were designed for testing pupils at the end of the kindergarten year or the beginning of the first grade. These tests provide a quick, convenient. and dependable basis for early classification of pupils, thus helping teachers manage the instructional effort more efficiently.

Six tests are included in Metropolitan Readiness Tests. as follows:

Test 1: Word Meaning. 16-item picture vocabulary test. The pupil selects from three pictures the one that illustrates the word the examiner names.

Test 2: Listening. a 16-item test of ability to comprehend phrases and sentences instead of individual words. The pupil selects from three pictures the one which portrays a situation or even the examiner describes briefly.

Test 3: Matching, a 14-item test of visual perception involving the recognition of similarities. The pupil marks one of three pictures which matches a given picture.

Test 4: Alphabet, a 16-item test of ability to recognize lower-case letters of the alphabet. The pupil chooses a letter named from among four alternatives.

Test 5: Numbers. a 26-item test which measures a combination of visual perception and motor control.

A seventh, optional, test. Draw-a-Man, provides an index of general intellectual maturity. This is an adaptation of one drawing from the Goodenough-Harris Drawing Test.

Metropolitan Readiness Tests

Means and Standard Deviations, Grade 1

Test:	1st Testing Mean	1st Testing SD	2nd Testing Mean	2nd Testing SD
Word Meaning	15.61	2.51	15.92	2.26
Sentences	10.52	2.39	10.86	2.27
Information	12.02	2.06	12.39	1.89
Matching	13.19	4.23	14.19	3.75
Numbers	13.50	4.78	14.38	4.85
Copying	5.26	2.76	5.31	2.75
Tests 1-4	51.07	8.83	53.20	8.13
Tests 1-6	69.71	13.92	72.96	13.12

Metropolitan Readiness Tests

Reliability:	Test	Reliability Coefficient
	Word Meaning	.583
	Sentences	.535
	Information	.586
	Matching	.773
	Numbers	.839
	Copying	.762
	Tests 1-4	.828
	Tests 1-6	.890

Validity:	Test	Average Reading	Numbers
	Test 1 Word Meaning	.409	.441
	Test 2 Sentences	.418	.424
	Test 3 Information	.341	.400
	Test 4 Matching	.486	.541
	Test 5 Numbers	.520	.634
	Test 6 Copying	.341	.403
	Tests 1-4 Reading Readiness	.475	.530
	Tests 1-6 Total Readiness	.534	.615

Metropolitan Readiness Tests (Critiques)

See Also:

Olson, A.V. and Johnson, C.I. "Structure and Predictive Validity of the Frostig Developmental Test of Visual Perception in Grades One and Three." The Journal of Special Education, 1970, 4(1), 49-52.

Otis-Lennon Mental Ability Test (2 Forms)

Purpose: To provide comprehensive, carefully articulated assessment of general mental ability, or scholastic aptitude of pupils in American schools.

Type of Test: Group intelligence

Range: Grades K-12

Time for Administration: 20-40 minutes

Cost: $5.50-$6.80 per 35 tests

Subtests: None

Levels: Primary I--last half of kindergarten
Primary II--first half of first grade
Elementary I--grades 1.5-3.9
Elementary II--grades 4-6
Intermediate--grades 7-9
Advanced--grades 10-12

Scores: Single deviation IQ
Mean = 100 Standard Deviation = 15

Nature of Test:

Emphasis is placed upon measuring the pupil's facility in reasoning and in dealing abstractly with verbal, symbolic, and figural content sampling a broad range of cognitive abilities. The new Otis-Lennon tests, like the previous editions in the Otis series, were constructed to yield dependable measurements of the "g" or general intellective ability factor. Thus, the single total score obtained at a given level summarizes the pupil's performance on a wide variety of test materials selected for their contribution to the assessment of this general ability factor.

Primary I Level: Test items of the pictorial type sample the mental processes of classification (education of relations), following of directions, quantitative reasoning, and comprehension of verbal concepts. The total score summarizes performance on the 55 items comprising the test. Each item in the test is presented orally by the examiner. This control ensures greater uniformity of test administration with children of this age and developmental level. No reading is required.

Primary II Level: Content of this level is identical to that contained in the Primary I Level.

Elementary I Level: Test items of the pictorial type sample the mental processes of classification (education of relations), following of directions, quantitative reasoning, comprehension of verbal concepts, and reasoning by analogy. The total score summarizes performance on the 80 items comprising the test. No reading is required.

Elementary II Level, Intermediate Level, and Advanced Level: The designated grade ranges for these levels should be used only as a general guide in the selection of a given level for use with a specific group of pupils. This flexibility in the use of the Otis-Lennon tests ensures more efficient measurement within groups of pupils displaying different developmental characteristics.

The test at each of these three levels is comprised of 80 items arranged in spiral omnibus form. A single total score summarizes performance on the particular test. Various types of verbal and non-verbal items sample a wide variety of mental processes. Emphasis is placed upon the measurement of abstract reasoning ability.

Otis-Lennon Mental Ability Test

Level	Grade	Mean (Raw Score)
Primary I	K	
Primary II	1	35.11
Elementary I	2	37.41
Elmentary I	3	45.75
Elementary II	4	34.05
Elementary II	5	43.72
Elementary II	6	52.21
Intermediate	7	37.46
Intermediate	8	43.70
Intermediate	9	49.22
Advanced	10	40.01
Advanced	11	43.55
Advanced	12	47.43

Otis-Lennon Mental Ability Test

			Validity	
Level	Grade	Reliability Split-Half	Content & Construct	Concurrent & Predictive
Primary I	K	.80-.90	Good	Poor
Primary II	1	.90	Good	Excellent
Elementary I	2	.89		
Elementary II	3	.92	Very Good	Excellent
Elementary II	4	.94		
Elementary II	5	.95	Very Good	Excellent
Elementary II	6	.95	Very Good	Excellent
Intermediate	7	.95		
Intermediate	8	.95		
Intermediate	9	.95		
Advanced	10	.95		
Advanced	11	.95		
Advanced	12	.96		

Otis-Lennon Mental Ability Test (Critiques)

See Also:

Grotelveschen, A. "Otis-Lennon Mental Ability Test." Journal of Educational Measurement, 1969, 6(2), 111-113.

Smith, A.E. "Otis-Lennon Mental Ability Test." Journal of Counselin Psychology, 1970, 17(1), 91-92.

Otis Quick Scoring Mental Ability Test (2 Forms)

Purpose: To measure mental ability--thinking power or the degree of maturity of the mind.

Type of Test: Group intelligence

Range: Grades 1.5-16

Time for Administration: 30-35 minutes

Cost: $2.30-3.20 per 25 tests

Subtests: None

Levels: Alpha Test--Grades 1.5-4
Beta Test--Grades 4-9
Gamma Test--High Schools & Colleges

Scores: Single Overall IQ

Standardized Mean = 100 Standard Deviation = 15

Nature of Test:

The Alpha Short Form is composed of 45 sets of four pictorial forms representing objects or designs. Each set of four pictures is treated as a nonverbal item, in which the pupil marks the picture which does not belong logically in the group, because it differs in kind.

The Beta and Gamma tests each yield a single score which summarizes the 80 items, including word meaning, verbal analogies, scrambled sentences, interpretation of proverbs, logical reasoning, number series, arithmetic reasoning, and design analogies. More than two thirds of the 80 items of the Beta Test measure some form of verbal competence. There is considerable evidence in the literature on group intelligence tests indicating that a single score reflecting a considerable emphasis on the use of verbal symbols will predict school success as well as a more complex pattern of scores.

School personnel should be especially cautious of applying the test findings to children with learning problems or to those who need remedial help in reading and in the language arts.

Otis Quick-Scoring Mental Ability Test

	Reliability			Validity	
	Test Retest	Internal Consistency	Alternate Form	Content & Construct	Concurrent & Predictive
Alpha Beta Gamma	.70	.80-.90	.70-.80	Good	Poor

Otis Quick-Scoring Mental Ability Tests (Critiques)

See Also:

Lefever, D.W. "Critique of Otis Quick-Scoring Mental Ability Tests." In O.K. Buros (ed.) The Sixth Mental Measurements Yearbook; Highland Park, New Jersey: The Gryphon Press, 1965, 362.

Nelson, C.M. and Hudson, F.G. "Predicting the Reading Achievement of Junior High School EMR Children." American Journal of Mental Deficiency, 1969, 74(3), 415-420.

Yates, A. "Critique of Otis Quick-Scoring Mental Ability Tests." In O.K. Buros (ed.) The Sixth Mental Measurements Yearbook; Highland Park, New Jersey: The Gryphon Press, 1965, 362.

Peabody Picture Vocabulary Test

(2 Forms)

Purpose: To provide an estimate of a subject's verbal intelligence through measuring his hearing vocabulary

Type of Test: Individual intelligence

Range: 2.5-18.5 years

Time for Administration: Untimed (usually 10-15 minutes)

Cost: $3.00 per 50 copies

Subtests: None

Scores: Total IQ

Standardized Mean = 100 Standard Deviation = 15

Nature of Test:

The test consists of 150 items, each of which consists of four pictures. The subject is asked to indicate which picture the examiner asks him to find. Besides being effective with average subjects, it has special value with certain other groups. Since no reading is required, it is especially fair for non-readers, and remedial cases. Because the answers may be indicated either orally or physically, it is advantageous for various handicapped persons. The illustrations are bold, clean line drawings without fine detail and figure-ground problems, thus making it more appropriate for visually-impaired and perceptually-handicapped individuals.

Peabody Picture Vocabulary Test

Age Levels	Reliability Coefficients For Raw Scores	Standard Errors For I.Q. Scores
18-0	0.84	6.00
17-0	0.84	6.00
16-0	0.80	6.70
15-0	0.83	6.18
14-0	0.81	6.54
13-0	0.70	8.22
12-0	0.78	7.04
11-0	0.81	6.54
10-0	0.77	7.20
9-0	0.74	7.65
8-0	0.79	6.87
7-0	0.74	7.65
6-0	0.67	8.61
5-0	0.73	7.80
4-6	0.72	7.94
4-0	0.77	7.20
3-6	0.81	6.54
3-0	0.75	7.50
2-6	0.76	7.35

Validity: Congruent - .71 (Stanford-Binet)
Congruent - .61 (Wechsler Scales)
Concurrent - .50+
Predictive - .38

Peabody Picture Vocabulary Test (Critiques)

Gage, G.E. and Naumann, T.F. "Correlation of the Peabody Picture Vocabulary Test and the Wechsler Intelligence Scale for Children." *The Journal of Educational Research*, 1965, 58(10), 466-468.

Mueller, M.W. "Validity of Six Tests of Ability with Educable Mental Retardates." *Journal of School Psychology*, 1968, 6(2), 136-146.

Nelson, C.M. and Hudson, F.G. "Predicting the Reading Achievement of Junior High School EMR Children." *American Journal of Mental Deficiency*, 1969, *74*(3), 415-420.

Pool, D.A. and Brown, R. "The Peabody Picture Vocabulary Test as a Measure of General Adult Intelligence." *Journal of Consulting and Clinical Psychology*, 1970, 34(1), 8-11.

Purdue Perceptual-Motor Survey

(1 Form)

Purpose: To assess qualitatively the perceptual-motor abilities of children in the early grades.

Type of Test: Individual performance

Range: All school age children

Time for Administration: Variable

Subtests:
- Walking Board (3)
- Jumping
- Identification of Body Parts
- Initiation of Movements
- Ocular Pursuit Movements (12)
- Rhythmic Writing (3)
- Obstacle Course
- Chalkboard (4)
- Kraus-Weber
- Angels-in-the-Snow
- Developmental Drawing (2)

Scores: 30 in all as indicated above.

Nature of Test:

Basically, the survey subtests or items can be divided into three major sections: those concerned with some aspect of laterality, with directionality, and with the skills of perceptual motor matching. There are also items and subtests which include all three of the constructs, or aspects of them, simultaneously. For example, the jumping subtest includes laterality, body image, rhythm, and neuromuscular differentiation. All of these constructs play a definite role in perceptual-motor development.

The essence of the perceptual-motor theory is a sequence of learning stages through which the child progresses. Later complex learnings are built upon initial learnings in a hierarchical fashion.

Purdue Perceptual Motor Survey

Reliability: .95

Validity: A pearson coefficient of correlation between total scores on the survey and teacher ratings yielded a concurrent validity coefficient of .654.

Name of Test: Purdue Perceptual Motor Survey

Item Means & Standard Deviations of the Perceptual Motor Survey by Grade Level

	Grade I		Grade II		Grade III		Grade IV	
	X	SD	X	SD	X	SD	X	SD
	Walking Board							
1. Forward	3.46	(.65)	3.66	(.48)	3.70	(.50)	3.72	(.45)
2. Backward	2.52	(.84)	2.88	(.59)	3.06	(.74)	3.30	(.54)
3. Sidewise	2.92	(.60)	3.20	(.67)	3.28	(.67)	3.40	(.73)
4. Jumping	2.46	(.81)	2.52	(.79)	2.90	(.97)	2.88	(.92)
5. Identification of Body Parts	2.48	(.91)	2.86	(.83)	3.20	(.76)	3.42	(.70)
6. Imitation of Movement	2.68	(.87)	2.82	(.75)	2.96	(.70)	3.22	(.71)
7. Obstacle Course	3.00	(.83)	3.30	(.71)	3.18	(.77)	3.56	(.64)
8. Circle	3.00	(.88)	3.18	(.75)	3.38	(.80)	3.48	(.54)
9. Double Circles	2.12	(.94)	2.50	(.89)	2.84	(.82)	2.82	(.72)
10. Lines, Lateral	3.00	(.96)	3.22	(.81)	3.48	(.73)	3.62	(.70)
11. Lines, Vertical	2.86	(.80)	3.00	(.90)	3.18	(.69)	3.34	(.77)
12. Kraus-weber	3.50	(.54)	3.62	(.63)	3.50	(.73)	3.82	(.43)
13. Angels-in-the-Snow	2.24	(.82)	2.60	(.73)	2.70	(.68)	2.54	(1.01)
	Ocular Pursuit Movements							
14. Both Eyes: Lateral	2.70	(.84)	3.08	(.78)	2.84	(.84)	3.36	(.63)
15. Both Eyes: Vertical	2.48	(.91)	3.04	(.67)	2.74	(.78)	3.22	(.76)
16. Both Eyes: Diagonal	2.42	(.88)	2.96	(.67)	2.74	(.83)	3.06	(.74)
17. Both Eyes: Rotary	2.36	(.87)	2.84	(.82)	2.60	(.86)	2.96	(.81)
18. Right Eye: Lateral	2.28	(.70)	2.88	(.72)	2.70	(.81)	3.06	(.82)
19. Right Eye: Vertical	2.22	(.74)	2.80	(.78)	2.64	(.80)	2.90	(.84)
20. Right Eye: Diagonal	2.04	(.75)	2.74	(.72)	2.46	(.95)	2.84	(.79)
21. Right Eye: Rotary	2.00	(.88)	2.60	(.88)	2.44	(.91)	2.66	(.96)
22. Left Eye: Lateral	2.20	(.75)	2.88	(.76)	2.76	(.77)	3.14	(.70)
23. Left Eye: Vertical	2.00	(.78)	2.82	(.69)	2.74	(.80)	2.98	(.77)
24. Left Eye: Diagonal	2.02	(.82)	2.68	(.74)	2.64	(.83)	2.88	(.82)
25. Left Eye: Rotary	1.78	(.76)	2.52	(.73)	2.50	(.89)	2.82	(.94)
	Developmental Drawing							
26. Form	1.94	(.82)	2.28	(.76)	2.22	(.81)	2.26	(.78)
27. Organization	2.00	(.90)	2.20	(.88)	2.56	(.93)	2.90	(.93)
	Rhythmic Writing							
28. Rhythm	2.14	(.83)	2.70	(.79)	2.82	(.82)	3.32	(.59)
29. Reproduction	1.78	(.79)	2.32	(.74)	2.88	(.79)	3.08	(.72)
30. Orientation	2.36	(.94)	2.84	(.79)	3.14	(.81)	3.32	(.79)

Raven Progressive Matrices (1 Form)

Purpose: To test observation and clear thinking

Type of Test: Individual intelligence

Range: 5-11 years (may also be applicable for younger children)

Time for Administration: 30 minutes

Cost: $14.50 per 25 tests, $2.00 per manual

Subtests: None

Scores: Single score
Standardized Mean = 100, S.D. = 15

Nature of Test:

The Progressive Matrices is a test of a person's capacity at the time of the test to apprehend meaningless figures presented for his observation, see the relations between them, conceive the nature of the figure completing each system of relations presented, and, by so doing, develop a systematic method of reasoning. The scale consists of 60 problems divided into five sets of twelve. In each set the first problem is as nearly as possible self-evident. The problems which follow become progressively more difficult. The scale is intended to cover the whole range of intellectual development.

Name of Test: Raven Progressive Matrices

Comparison Between Test Results for 25 Normal and 29 Disturbed Children, 6 1/2- 12 1/2 Years of Age, Given the Matrices and the Vocabulary Scale Three Times at Intervals of Three Months

Tests given at intervals of 3 months		Normal School Children			Emotionally Disturbed Children		
		1st	2nd	3rd	1st	2nd	3rd
	P.M. Mean Score	24.9	27.2	28.9	20.5	21.9	23.4
TEST SCORES	Standard Dev.	5.8	6.3	7.1	6.1	7.2	7.4

Raven Progressive Matrices

Reliability: .88
Validity: Content and Construct - Good
Concurrent and Predictive - Fair

Raven Progressive Matrices (Critiques)

See Also:

Knief, L.M. and Stroud, J.B. "Intercorrelations Among Various Intelligence, Achievement, and Social Class Scores." Journal of Educational Psychology, 1959, 50(3), 117-120.

Mueller, M.W. "Validity of Six Tests of Ability with Educable Mental Retardates." Journal of School Psychology, 1968, VI(2), 136-146.

Stanford Achievement Tests

(3 Forms)

Purpose: To test the educational achievements that are commonly expected of students in a modern comprehensive school

Type of Test: Individual or group achievement

Range: Grades 1-12

Time for Administration: Varies from 127-440 minutes (4-7 sessions)

Cost: $5.65-$9.75 per 35 tests, $.60-$1.60 per set of keys

Subtests: Primary I Battery (Grades 1.5-2.5)
- Word Reading (Word Meaning)
- Paragraph Meaning
- Vocabulary
- Spelling
- Word Study Skills
- Arithmetic (Concepts)

Primary II Battery (Grades 2.5-3.9)
- Word Meaning
- Paragraph Meaning
- Science & Social Studies Concepts
- Arithmetic Concepts
- Spelling
- Word Study Skills
- Language
- Arithmetic Computation

Intermediate I Battery (Grades 4.0-5.5)
- Word Meaning
- Paragraph Meaning
- Spelling
- Word Study Skills
- Language
- Social Studies
- Arithmetic Computation
- Arithmetic Concepts
- Arithmetic Applications
- Science

Intermediate II Battery (Grades 5.5-6.9)
- Word Meaning
- Paragraph Meaning
- Spelling
- Language
- Science
- Arithmetic Computation
- Arithmetic Concepts
- Arithmetic Applications
- Social Studies

Advanced Battery (Grades 7.0-9.9)
- Paragraph Meaning
- Spelling
- Language
- Arithmetic Computation
- Arithmetic Concepts
- Arithmetic Applications
- Social Studies
- Science

High School Battery (Grades 9-12)
- Reading
- Spelling
- English
- Numerical Competence
- Science
- Mathematics
- Social Studies
- Arts & Humanities
- Business & Economics
- Technical Comprehension

Scores: Raw; for each subtest

Stanford Achievement Tests

Subtest:	Word Reading	Grade 1	Means 16.1	S.D. 6.88
	Paragraph Meaning	Grade 1	Means 14.1	S.D. 7.05
	Vocabulary	Grade 1	Means 18.8	S.D. 6.69
	Spelling	Grade 1	Means 7.7	S.D. 6.05
	Word Study Skills	Grade 1	Means 31.7	S.D. 9.47
	Arithmetic	Grade 1	Means 30.4	S.D. 14.43
Subtest:	Word Meaning	Grade 2	Means 16.0	S.D. 6.3
	Paragraph Meaning	Grade 2	Means 28.1	S.D. 12.35
	Sci. & Social Studies Concepts	Grade 2	Means 17.6	S.D. 4.97
	Spelling	Grade 2	Means 10.9	S.D. 7.24
	Word Study Skills	Grade 2	Means 34.5	S.D. 12.90
	Language	Grade 2	Means 35.3	S.D. 9.72
	Arith. Computation	Grade 2	Means 18.4	S.D. 8.38
	Arith. Concepts	Grade 2	Means 17.2	S.D. 7.42
Subtest:	Word Meaning	Grade 3	Means 23.5	S.D. 6.68
	Paragraph Meaning	Grade 3	Means 40.1	S.D. 11.33
	Sci. & Social Studies Concepts	Grade 3	Means 22.1	S.D. 5.70
	Spelling	Grade 3	Means 18.4	S.D. 7.73
	Word Study Skills	Grade 3	Means 42.1	S.D. 13.23
	Language	Grade 3	Means 46.4	S.D. 11.40
	Arith. Computation	Grade 3	Means 32.4	S.D. 9.30
	Arith. Concepts	Grade 3	Means 26.6	S.D. 9.58
Subtest:	Word Meaning	Grade 4	Means 19.0	S.D. 7.94
	Paragraph Meaning	Grade 4	Means 30.6	S.D. 11.22
	Spelling	Grade 4	Means 28.6	S.D. 11.37
	Word Study Skills	Grade 4	Means 37.9	S.D. 12.92
	Language	Grade 4	Means 73.6	S.D. 17.15
	Arith. Computation	Grade 4	Means 19.2	S.D. 7.07
	Arith. Concepts	Grade 4	Means 15.4	S.D. 6.86
	Arith. Applications	Grade 4	Means 16.0	S.D. 6.46
	Social Studies	Grade 4	Means 25.8	S.D. 8.28
	Science	Grade 4	Means 31.1	S.D. 11.16
Subtest:	Word Meaning	Grade 5	Means 22.3	S.D. 8.76
	Paragraph Meaning	Grade 5	Means 31.7	S.D. 11.96
	Spelling	Grade 5	Means 26.8	S.D. 10.14
	Language	Grade 5	Means 81.2	S.D. 18.72
	Arith. Computation	Grade 5	Means 14.8	S.D. 5.18
	Arith. Concepts	Grade 5	Means 12.1	S.D. 5.15
	Arith. Applications	Grade 5	Means 16.6	S.D. 6.05
	Social Studies	Grade 5	Means 37.3	S.D. 11.79
	Science	Grade 5	Means 30.0	S.D. 9.53

(Continued)

Stanford Achievement Tests

Subtest:	Word Meaning	Grade 6	Means 27.6	S.D. 9.25
	Paragraph Meaning	Grade 6	Means 38.4	S.D. 11.94
	Spelling	Grade 6	Means 33.1	S.D. 11.26
	Language	Grade 6	Means 90.5	S.D. 18.88
	Arith. Computation	Grade 6	Means 21.7	S.D. 7.21
	Arith. Concepts	Grade 6	Means 16.8	S.D. 6.80
	Arith. Applications	Grade 6	Means 21.5	S.D. 7.83
	Social Studies	Grade 6	Means 44.6	S.D. 12.41
	Science	Grade 6	Means 35.0	S.D. 9.69
Subtest:	Paragraph Meaning	Grade 7	Means 31.0	S.D. 11.86
	Spelling	Grade 7	Means 26.4	S.D. 10.88
	Language	Grade 7	Means 92.5	S.D. 17.71
	Arith. Computation	Grade 7	Means 19.2	S.D. 7.28
	Arith. Concepts	Grade 7	Means 16.5	S.D. 6.47
	Arith. Applications	Grade 7	Means 13.7	S.D. 5.14
	Social Studies	Grade 7	Means 44.9	S.D. 13.15
	Science	Grade 7	Means 32.2	S.D. 9.82
Subtest:	Paragraph Meaning	Grade 8	Means 35.6	S.D. 11.95
	Spelling	Grade 8	Means 31.0	S.D. 12.23
	Language	Grade 8	Means 98.0	S.D. 17.70
	Arith. Computation	Grade 8	Means 23.5	S.D. 8.35
	Arith. Concepts	Grade 8	Means 20.4	S.D. 7.58
	Arith. Applications	Grade 8	Means 16.4	S.D. 5.76
	Social Studies	Grade 8	Means 50.3	S.D. 13.52
	Science	Grade 8	Means 35.6	S.D. 10.09
Subtest:	Paragraph Meaning	Grade 9	Means 38.0	S.D. 12.25
	Spelling	Grade 9	Means 32.9	S.D. 12.50
	Language	Grade 9	Means 101.5	S.D. 18.12
	Arith. Computation	Grade 9	Means 25.8	S.D. 8.84
	Arith. Concepts	Grade 9	Means 22.7	S.D. 8.21
	Arith. Applications	Grade 9	Means 17.5	S.D. 5.68
	Social Studies	Grade 9	Means 52.6	S.D. 13.60
	Science	Grade 9	Means 38.0	S.D. 9.98

Stanford Achievement Tests

Primary I Grade I	r_{11}
Word Reading	.85
Paragh. Meaning	.90
Vocabulary	.79
Spelling	.92
Word Study Skills	.88
Arithmetic	.95

Primary II Grade 2	r_{11}
Word Meaning	.85
Paragh. Meaning	.93
Sci. Soc. Studies Concepts	.66
Spelling	.94
Word Study Skills	.92
Language	.84
Arith. Comput.	.93
Arith. Concepts	.86

(Continued)

Stanford Achievement Tests

Primary II Grade 3	r_{11}
Word Meaning	.87
Paragraph Meaning	.93
Sci. Soc. Studies Concepts	.79
Spelling	.94
Word Study Skills	.94
Language	.89
Arith. Comput.	.93
Arith. Concepts	.90

Intermediate I Grade 4	r_{11}
Word Meaning	.90
Paragraph Meaning	.92
Spelling	.93
Word Study Skills	.94
Language	.93
Arith. Comput.	.89
Arith. Concepts	.86
Arith. Applications	.86
Social Studies	.86
Science	.91

Intermediate II Grade 5	r_{11}
Word Meaning	.89
Paragraph Meaning	.93
Spelling	.91
Language	.93
Arith. Comput.	.83
Arith. Concepts	.77
Arith. Applications	.84
Social Studies	.89
Science	.88

Intermediate II Grade 6	r_{11}
Word Meaning	.90
Paragraph Meaning	.93
Spelling	.93
Language	.95
Arith. Comput.	.89
Arith. Concepts	.85
Arith. Applications	.89
Social Studies	.91
Science	.90

Advanced Grade 7	r_{11}
Paragraph Meaning	.93
Spelling	.91
Language	.94
Arith. Comput.	.87
Arith. Concepts	.82
Arith. Applications	.77
Social Studies	.89
Science	.88

Advanced Grade 8	r_{11}
Paragraph Meaning	.93
Spelling	.92
Language	.94
Arith. Comput.	.90
Arith. Concepts	.86
Arith. Applications	.81
Social Studies	.91
Science	.89

Advanced Grade 9	r_{11}
Paragraph Meaning	.94
Spelling	.94
Language	.94
Arith. Comput.	.92
Arith. Concepts	.87
Arith. Applications	.79
Social Studies	.90
Science	.90

Grade 9 (Reliability Coefficients)	r_{11}
English	.94
Numerical Competence	.90
Math - Part A	.84
Math - Total	.84
Reading	.90
Science - Part A	.87
Science - Total	.87
Social Studies	.85
Spelling	.89
Arts & Humanities	.91
Business & Economics	.88
Tech. Comprehension	.92

(Continued)

Stanford Achievement Tests (Reliability Coefficients)

Grade 10	r_a
English	.94
Numerical Competence	.90
Math - Part A	.89
Math - Total	.89
Reading	.91
Science - Part A	.88
Science - Total	.89
Social Studies	.85
Spelling	.90
Arts & Humanities	.92
Business & Economics	.88
Tech. Comprehension	.93

Grade 11	r_a
English	.94
Numerical Competence	.92
Math - Part A	.92
Math - Total	.93
Reading	.92
Science - Part A	.87
Science - Total	.89
Social Studies	.88
Spelling	.91
Arts & Humanities	.93
Business & Economics	.90
Tech. Comprehension	.94

Grade 12	r_a
English	.94
Numerical Competence	.92
Math - Part A	.92
Math - Total	.94
Reading	.91
Science - Part A	.87
Science - Total	.89
Social Studies	.88
Spelling	.92
Arts & Humanities	.93
Business & Economics	.90
Tech. Comprehension	.94

Stanford Achievement Tests	Validity	
	Content & Construct	Concurrent & Predictive
Arith. Applications	Good	Good
Arith. Computation	Very Good	Good
Arith. Concepts	Very Good	Fair
Arith. Total	Good	Fair
Language	Very Good	Fair
Paragraph Meaning	Very Good	Fair
Vocabulary	Very Good	Poor
Word Meaning	Very Good	Fair
Science	Good	Good
Science & Social Studies		Good
Concepts		Poor
Social Studies	Good	Good
Spelling	Very Good	Fair
Word Study Skills	Very Good	Fair

Stanford Achievement Tests (Critiques)

See Also:

Olson, A.V. and Johnson, C.I. "Structure and Predictive Validity of the Frostig Developmental Test of Visual Perception in Grades One and Three." *The Journal of Special Education*, 1970, 4(1), 49-52.

Stake, R.E. and Hastings, J.T. "The Stanford Achievement Test Battery." *Personnel and Guidance Journal*, 1964, 43(10), 178-184.

Stanford-Binet Intelligence Scale (1 Form)

Purpose: To test mental ability

Type of Test: Individual intelligence

Range: Two years-Adult

Time for Administration: 60-90 minutes

Cost: $33.20 per set of test materials, $4.40 per 35 record booklets, $4.48 per manual

Subtests: None

Scores: Total IQ, scaled

Nature of Test:

This test differs according to age level. Many of the tests at the lower age levels are quite concrete, dealing with little objects and pictures. At the upper levels, the tests tend to be more abstract and quite heavily verbal. The various tests include tasks calling for display of past learnings, perception of relations, judgment, interpretation, sustained attention, immediate memory, and other cognitive processes.

In testing a child, the examiner begins at a level where the child is likely to succeed, but only with some effort. If the child fails these and appears discouraged, the examiner will drop back to an easier level. Otherwise, he will move ahead, level-by-level, until he reaches a level at which the child fails all tests. When the upper limit has been established, the examiner will go back and establish the level at which the child can do all the tasks.

Stanford-Binet Intelligence Scale (Standardization Sample Scores)

Age	Means	Standard Deviation
All	101.8	16.4

Reliability: .91
Validity: .82-.90

Stanford-Binet Intelligence Tests (Critiques)

See Also:

Churchhill, W.D. and Smith, S.E. "The Relationship of the 1960 Revised Stanford Binet Intelligence Scale to Intelligence and Achievement Test Scores Over a Three-Year Period." Educational and Psychological Measurement, 1966, 26(4), 1015-1020.

Deloria, D. The Stanford-Binet in the Ypsilanti Curriculum. Why?

Himelstein, P. "Research with the Stanford-Binet, Form L-M: The First Five Years." Psychological Bulletin, 1966, 65(3), 156-164.

Hirshoren, A. "A Comparison of the Predictive Validity of the Revised Stanford-Binet Intelligence Scale and the Illinois Test of Psycholinguistic Abilities," 1969, 35(3), 517-521.

Mueller, M.W. "Validity of Six Tests of Ability with Educable Mental Retardates." Journal of School Psychology, 1968, 6(2), 136-146.

Nelson, C.M. and Hudson, F.G. "Predicting the Reading Achievement of Junior High School EMR Children." American Journal of Mental Deficiency, 1969, 74(3), 415-420.

Scherer, I.W. "The Prediction of Academic Achievement in Brain-Injured Children." Exceptional Children, 1961, 103-107.

Wechsler Intelligence Scale for Children (1 Form)

Purpose: To test the educational achievements that are commonly expected of students in a modern comprehensive school.

Type of Test: Individual intelligence

Range: 5-15 years

Time for Administration: 40-60 minutes

Cost: $25.00 per set, $2.50 for 25 records

Subtests:
Information
Comprehension
Arithmetic
Similarities
Vocabulary
Digit Span
Picture Completion
Picture Arrangement
Block Design
Object Assembly
Coding
Mazes

Scores: Verbal, Performance, Full Scale Scores, can be converted to IQ's.

Verbal Scale Score is the sum of Information, Comprehension, Arithmetic, Similarities, and Vocabulary scores.

Performance Scale Score is the sum of Picture Completion, Picture Arrangement, Block Design, Object Assembly, and Coding scores.

Full Scale Score is the sum of verbal and performance scores.

Nature of Subtests:

Verbal

1. Information - Non-academic knowledge - acquired from exposure to common experience and education - indicates educational, cultural background as well as native ability, interest and alertness--general knowledge.
2. Comprehension - A test of common sense - A measure of judgment - a utilization of one's general knowledge in concrete situations of a social and emotional nature.
3. Arithmetic - A measure of the ability to utilize knowledge involved in reasoning and concentration - influenced by educational and vocational background.
4. Similarities - A measure of verbal concept formation -logical reasoning. Susceptible to defects of conceptual thinking of impairment of abstraction which leads to concrete thinking.
5. Vocabulary - Affected by foreign language background - the defining of the words reveals much about the thought processes - relatively impervious to impairment and deterioration.
6. Digit Span - Immediate memory - A measure of rote memory - involves receptivity, readiness of response, attention, and extremely susceptible to tension and anxiety.

Performance

1. Picture Completion - Measures basic perceptual and conceptual abilities-visual recognition and identification of familiar objects and forms - ability to differentiate essential and non-essential details - visual concentration.

2. Picture Arrangement - Measures ability to comprehend and size up a total situation (judgment, perception, interpretation) - a test of planning ability. Individuals with organic damage (frontal lobes) will do poorly on this test. Psychopaths do well.
3. Block Design - Measures both analytical and synthetic ability - the ability to break a whole into parts and then produce it with blocks - involves abstract conceptualization and ability to shift - affected by organic brain damage.
4. Object Assembly - Measures visual-motor coordination - visual-spatial organization is more important than speed.
5. Coding - Visual memory and motor coordination - speed.

Mazes - Planning and follow-through with a visual pattern; new learning ability.

Wechsler Intelligence Scale for Children Age 7 1/2--100 Boys

	Infor mation	Comprehension	Arithmetic	Similarities	Vocabulary	Digit Span	Pict. Complet.	Pict. Arrang.
Mean	10.0	10.0	10.1	9.9	10.1	9.8	10.0	10.1
S.D.	2.9	2.8	2.7	2.8	2.6	2.8	2.8	2.9

	Block Design	Object Assembly	Coding A	Mazes	Verbal Score	Perfor. Score	Full Scale Score
Mean	10.1	9.9	10.1	10.0	50.0	4.8	100.3
S.D.	2.8	3.0	3.1	3.0	10.3	9.8	18.0

Wechsler Intelligence Scale for Children Age 10 1/2--100 Boys and 100 Girls

	Information	Comprehension	Arithmetic	Similarities	Vocabulary	Digit Span	Pict. Complet.	Pict. Arrang.
Mean	9.9	10.1	10.2	10.0	10.1	10.0	10.0	9.9
S.D.	2.9	3.1	3.1	3.0	3.1	2.9	3.0	3.1

	Block Design	Object Assembly	Coding A	Mazes	Verbal Score	Perfor. Score	Full Scale Score
Mean	10.1	10.0	10.0	10.1	50.2	50.0	100.2
S.D.	3.0	2.9	3.1	2.9	12.8	10.5	21.4

Wechsler Intelligence Scale for Children Age 13 1/2--100 Boys and 100 Girls

	Information	Comprehension	Arithmetic	Similarities	Vocabulary	Digit Span	Picture Completion	Picture Arrangement
Mean	9.9	10.2	10.0	10.0	10.0	10.0	10.1	10.0
S.D.	3.0	3.2	2.8	2.9	3.2	2.8	2.9	3.1

	Block Design	Object Assembly	Coding A	Mazes	Verbal Score	Performance Score	Full Scale Score
Mean	9.8	10.0	9.9	10.1	50.1	49.7	99.8
S.D.	3.1	3.0	3.1	2.9	12.4	11.1	20.7

Wechsler Intelligence Scale for Children

Reliability	Age 7 1/2	Age 10 1/2	Age 13 1/2
Information	.66	.80	.82
Comprehesion	.59	.73	.71
Arithmetic	.63	.84	.77
Similarities	.66	.81	.79
Vocabulary	.77	.91	.90
Digit Span	.60	.59	.50
Verbal Score (without Digit Span)	.88	.96	.96
Picture Completion	.59	.66	.68
Picture Arrangement	.72	.71	.72
Block Design	.84	.87	.88
Object Assembly	.63	.63	.71
Coding**	.60	---	---
Mazes	.79	.81	.75
Performance Score (without Coding & Mazes)	.86	.89	.90
Full Scale Score (without Digit Span,Coding & Mazes)	.92	.95	.94

Validity:	Content & Construct	Concurrent & Predictive
Information	Good	Poor
Comprehension	Good	Poor
Arithmetic	Good	Poor
Similarities	Good	Poor
Vocabulary	Good	Poor
Digit Span	Very Good	Poor
Verbal Score	Good	Fair
Picture Completion	Good	Poor
Picture Arrangement	Good	Poor
Block Design	Very Good	Poor
Object Assembly	Very Good	Poor
Coding	Good	Poor
Mazes	Very Good	Poor
Performance Score	Good	Poor
Full Scale Score	Good	Poor

Wechsler Intelligence Scale for Children (Critiques)

See Also:

Burnes, K. "Pattern of WISC Scores for Children of Two Socio-Economic Classes and Races." *Child Development*, 1970, *41*, 493-499.

Gage, G.E. and Naumann, T.F. "Correlation of the Peabody Picture Vocabulary Test and the Wechsler Intelligence Scale for Children." *The Journal of Educational Research*, *58*(10), 466-468.

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Reid, W.R. and Schoer, L.A. "Reading Achievement, Social Class and Subtest Pattern on the WISC." *The Journal of Educational Research*, 1966, 59(10), 469-472.

Silverstein, A.B. "Reappraisal of the Validity of WAIS, WISC, and WPPSI Short Forms." *Journal of Consulting and Clinical Psychology*, 1970, 34(1), 12-14.

Wechsler Preschool & Primary Scale of Intelligence (1 Form)

Purpose: To appraise abilities of the preschool child.

Type of Test: Individual intelligence

Range: 4-6.5 years

Time for Administration: 50-75 minutes

Subtests:
- Information
- Vocabulary
- Arithmetic
- Similarities
- Comprehension
- Sentences
- Animal House
- Picture Completion
- Mazes
- Geometric Design
- Block Design

Scores: Verbal, Performance, Full-Scale Scores, can be converted to IQ's

Scale Score = sum of scores from Information, Vocabulary, Arithmetic, Similarities, Comprehension subtests.

Scale Score = sum of scores from Animal House, Picture Completion Mazes, Geometric Design and Block Design subtests.

Pull Scale Score = sum of scores from Performance and Verbal IQ's.

Nature of Test:

The WPPSI continues the methodological and theoretical approaches to mental ability which were the guiding principles in the construction of the Wechsler Intelligence Scale for Children. It was designed to cope more effectively with the psychometric problems presented in testing 4- to 6 1/2-year olds. Like the WISC, it consists of a battery of subtests, each of which, when treated separately, may be considered as a measure of a different ability, and when combined into a composite score, as a measure of overall or global intellectual capacity.

Weschsler Preschool & Primary Scale of Intelligence (WPPSI)

Means & Standard Deviations of Sums of Verbal, Performance, & Total Scaled Scores by Age Group

Verbal			Performance			Total		
Age	Mean	S.D.	Age	Mean	S.D.	Age	Mean	S.D.
4	49.56	12.20	4	49.65	10.88	4	99.20	21.16
4 1/2	50.22	12.09	4	50.10	10.21	4	100.32	20.13
5	50.43	11.14	5	50.20	11.37	5	100.63	20.33
5 1/2	50.22	12.13	5 1/2	50.24	11.63	5 1/2	100.46	21.71
6	49.84	12.01	6	49.64	11.66	6	99.47	21.91
6 1/2	50.30	12.15	6 1/2	49.90	10.51	6 1/2	100.21	20.44

Wechsler Preschool & Primary Scale of Intelligence

Reliability Coefficients of the Tests and IQ's by Age Group

	4	4 1/2	5	5 1/2	6	6 1/2
Test	r_{11}	r_{11}	r_{11}	r_{11}	r_{11}	r_{11}
Information	.84	.81	.77	.81	.84	.75
Vocabulary	.82	.84	.78	.85	.87	.86
Arithmetic	.81	.78	.84	.86	.82	.83
Similarities	.85	.82	.83	.82	.84	.84
Comprehension	.78	.83	.78	.84	.82	.78
Sentences	.88	.87	.83	.87	.81	.84
Animal House	.62	.71	.79	.82	.84	.76
Picture Completion	.85	.84	.81	.86	.83	.81
Mazes	.85	.82	.88	.91	.87	.88
Geometric Design	.80	.82	.82	.84	.87	.77
Block Design	.76	.78	.83	.85	.88	.81
Verbal IQ	.94	.94	.93	.95	.95	.94
Performance IQ	.91	.92	.94	.95	.95	.92
Full Scale IQ	.96	.96	.96	.97	.97	.96

Wechsler Preschool & Primary Scale of Intelligence

Validity	Grade	Content & Construct			Concurrent & Predictive		
		Pre. Sc.	K	1	Pre Sc.	K	1
Information		Good	Good	Good	Not	Fair	Fair
Vocabulary		Very Good	Very Good	Good	Not Reported	Fair	Fair
Arithmetic		Good	Good	Good	Not Reported	Fair	Fair
Similarities		Good	Very Good	Good	Not Reported	Fair	Fair
Comprehension		Good	Good	Good	Not Reported	Fair	Fair
Sentences		Very Good	Very Good	Very Good	Not Reported	Fair	Fair
Verbal Score		Good	Good	Good	Not Reported	Fair	Fair
Animal House		Good	Good	Good	Not Reported	Fair	Fair
Picture Completion		Good	Good	Good	Not Reported	Fair	Fair
Mazes		Good	Good	Very Good	Not Reported	Fair	Fair

Wechsler Preschool & Primary Scale of Intelligence (continued)

Validity	Grade	Content & Construct			Concurrent & Predictive		
		Pre. Sc.	K	1	Pre Sc.	K	1
Geometric Design		Good	Good	Very Good	Not Reported	Fair	Fair
Block Design		Good	Very Good	Good	Not Reported	Fair	Fair
Performance Score		Good	Good	Very Good	Not Reported	Fair	Fair
Full Scale Score		Good	Good	Good	Not Reported	Fair	Fair

Wechsler Preschool & Primary Scale of Intelligence (Critiques)

See Also:

Silverstein, A.B. "Reappraisal of the Validity of WAIS, WISC and WPPSI Short Forms." Journal of Consulting and Clinical Psychology, 1970, 34(1), 12-14.

Wepman Auditory Discrimination Test

Purpose: To measure the ability to hear accurately.

Type of Test: Individual hearing.

Range: 5-8 years.

Time for Administration: 5-10 minutes.

Cost: $5.00 per 50 tests.

Subtests: None

Scores: Single auditory discrimination score.

Nature of Test:

This test is a method of determining a child's ability to recognize the fine differences that exist between the phonemes used in English speech. The child is asked to listen to the examiner read pairs of words and to indicate whether the words read were the same (a single word repeated) or different (two different words). Every possible match of phonemes used in English was made within phonetic categories. No cross phonetic category matching was done. Each word pair was equated for length to avoid the possibility of discrimination being based on span.

The test consists of thirty pairs of words differing in a single phoneme in each pair, and ten word-pairs which do not differ, as false choices.

The test has been found useful in selecting children, especially in early elementary school years, who are slower than their peers in developing auditory discrimination. This ability has been found to be highly related to the development of speech accuracy. For older children the test has been found useful in the differential diagnosis of reading and speech difficulties.

Wepman Auditory Discrimination Test Inadequate Development Shown on Test

For 5 year olds -- x errors greater than six
For 6 year olds -- x errors greater than five
For 7 year olds -- x errors greater than four
For 8 and older -- x errors greater than three

Auditory Discrimination Test (Wepman)

Reliability: Test-Retest ≥ .90
Internal Consistency < .70
Alternate Form < .70

Validity : Content and Construct: Good
Concurrent and Predictive: Poor

Wepman Auditory Discrimination Test (Critiques)

See Also:

Di Carlo, L.M. Critique of Auditory Discrimination Test (Wepman). In O.K. Buros (ed.) The Sixth Mental Measurement Yearbook. Highland Park, New Jersey: The Gryphon Press, 1965, 940.

Wide Range Achievement Tests

(1 Form)

Purpose: To assess scholastic achievement

Type of Test: Individual achievement

Range: Kindergarten-college

Time for Administration: 20-45 minutes

Cost: $3.60 per 50 tests

Levels: I-ages 5-11, II-ages 12-24

Subtests: Reading, spelling, arithmetic

Scores: One for each subtest

Nature of Test:

The WRAT was designed to serve as a convenient tool for the study of the basic school subjects and as an adjunct to tests of intelligence and behavior adjustment. The WRAT consists of the following three subtests, at both levels:

1. Reading: recognizing and naming letters and pronouncing words.
2. Spelling: copying marks resembling letters, writing the name, and writing single words to dictation.
3. Arithmetic: counting, reading number symbols, solving oral problems, and performing written computations.

Means & Standard Deviations of Raw Scores of the Reading Test for Ages 5 to Adult--Both Levels

Age	Mean	Standard Deviation	Age	Mean	Standard Deviation
5	16.96	7.70	11	38.15	11.09
5 1/2	19.37	7.75	11 1/2	40.15	11.53
6	24.08	10.43	12	43.92	11.78
6 1/2	32.25	10.72	12 1/2	45.64	11.81
7	39.85	12.30	13	46.40	11.75
7 1/2	46.83	12.40	13 1/2	48.73	11.92
8	51.48	12.68	14	51.14	11.87
8 1/2	54.17	13.04	14 1/2	52.29	12.06
9	57.40	13.07	15	54.31	12.13
9 1/2	61.16	13.37	15 1/2	54.93	12.20
10	63.18	13.44	16	55.76	12.72
10 1/2	66.60	13.39	17	57.29	12.76
11	68.48	13.35	18-19	58.74	13.79
11 1/2	70.35	13.28	20-24	59.84	14.00
12	73.11	13.19	25-34	59.20	13.95
12 1/2	77.49	12.97	35-44	59.19	14.04
			45 Up	58.98	14.13

Means & Standard Deviations of Raw Scores of the Spelling Test for Ages 5 to Adult--Both Levels

Age	Mean	Standard Deviation	Age	Means	Standard Deviation
5	13.87	5.26	11	18.40	7.58
5 1/2	15.35	5.57	11 1/2	19.58	7.71
6	18.70	5.70	12	24.13	8.66
6 1/2	23.50	5.80	12 1/2	25.84	8.78
7	27.03	6.13	13	27.08	8.84
7 1/2	31.15	6.30	13 1/2	29.04	8.95
8	33.56	6.47	14	30.35	8.73
8 1/2	35.28	6.66	14 1/2	31.02	8.82
9	37.56	6.91	15	31.63	8.98
9 1/2	40.07	7.35	15 1/2	32.90	9.39
10	42.15	7.94	16	33.86	9.34
10 1/2	44.05	8.01	17	35.24	9.25
11	45.87	8.00	18-19	36.06	10.09
11 1/2	46.72	8.00	20-24	36.94	10.15
12	48.69	7.97	25-34	35.63	10.60
12 1/2	50.81	7.76	35-44	34.86	10.89
			45 Up	33.51	10.26

Means & Standard Deviations of Raw Scores of the Arithmetic Test for Ages 5 to Adult--Both Levels

Age	Means	Standard Deviation	Age	Means	Standard Deviation
5	12.74	4.41	11	19.72	4.78
5 1/2	13.51	4.49	11 1/2	21.01	4.89
6	17.14	4.70	12	23.71	5.46
6 1/2	19.32	4.74	12 1/2	25.22	5.70
7	22.16	4.62	13	26.31	6.08
7 1/2	24.97	4.68	13 1/2	27.63	6.10
8	27.03	4.51	14	28.30	6.15
8 1/2	28.50	4.42	14 1/2	29.48	6.38
9	29.95	4.43	15	29.50	6.37
9 1/2	31.93	4.80	15 1/2	29.65	6.63
10	33.72	5.77	16	29.85	6.91
10 1/2	37.03	6.27	17	30.60	7.25
11	39.48	6.50	18-19	29.12	7.70
11 1/2	41.72	6.58	20-24	28.54	8.00
12	44.01	6.94	25-34	25.57	7.95
12 1/2	46.25	6.97	35-44	23.06	7.74
			45 Up	20.90	7.82

Reliability Coefficients (r) of the Raw Scores of the Reading Subtest

Age in Years	Level I r	Age in Years	Level II r
5	.981	12	.986
6	.986	13	.987
7	.993	14	.988
8	.991	15	.986
9	.989	16-17	.985
10	.990	18-19	.983
11	.987	20-Up	.987

Reliability of the Spelling Subtest

Age in Years	Level I r	Age in Years	Level II r
5	.971	12	.979
6	.963	13	.989
7	.977	14	.987
8	.978	15	.982
9	.977	16-17	.984
10	.981	18-19	.984
11	.982	20-Up	.986

Reliability Coefficients (r) of the Raw Scores of the Arithmetic Subtest

Age in Years	Level I r	Age in Years	Level II r
5	.966	12	.940
6	.959	13	.957
7	.962	14	.956
8	.948	15	.966
9	.942	16-17	.955
10	.948	18-19	.969
11	.945	20-Up	.970

Wide Range Achievement Tests

Validity:	Content & Construct	Concurrent & Predictive
Arithmetic	*Good	Good
Reading	Good	Good
Spelling	Good	Good

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*Kindergarten - Very Good

Wide Range Achievement (Critiques)

See Also:

Fortenberry, W.D. and Broome, B.J. "Comparison of the Gates Reading Survey and the Reading Section of the Wide-Range Achievement Test." Journal of Developmental Reading, 1963, 7(3), 66-68.

Hopkins, K.D., Dobson, J.C. and Oldridge, O.A. "The Concurrent and Congruent Validities of the Wide-Range Achievement Test." Educational and Psychological Measurement, 1962, 22(4), 791-793.

Mueller, M.W. "Validity of Six Tests of Ability with Educable Mental Retardates." Journal of School Psychology, 1968, 6(2), 136-146.

Anderson, H.E. and Leton, D.A. "Factor Analysis of the California Test of Mental Maturity." Educational and Psychological Measurements, 1964, 24(3), 513-523.

When the California Test of Mental Maturity (CTMM) was originally published in 1936, it was designed as a group intelligence test, to be the counterpart of the Stanford-Binet individual intelligence test. A short form of the test (CTMM-SF) was published in 1938; both forms were revised in 1963, but their purpose remained the same.

The original factor analysis of the CTMM was carried out in 1938 and the results were utilized in the organization of the subtests on later revisions of the test. The present article is concerned with the factor analytic studies conducted with the 1963 revision of the CTMM and CTMM-SF.

Five levels of the CTMM and CTMM-SF (which collectively span grades one through twelve) were analyzed separately, and means, standard deviations, and Kudar-Richardson reliability coefficients were computed for each of the subtests. The product-moment correlation for each pair of variables was determined and the centroid method was used to factor each of the ten intercorrelation matrices. The factor structures that resulted were rotated by the varimax method and additional necessary rotations and adjustments were made by hand using simple structure and positive manifold as criteria.

The factor analysis revealed three components for the short-form tests: Logical Reasoning, Numerical Reasoning, and Verbal/Memory. The long-form tests also included the Logical and Numerical Reasoning factors. However, three additional factors were determined: Spatial Relations, Memory, and Verbal Concepts. The results for Level 1 (grades one through three) differed somewhat from the others and seemed to indicate the presence of perceptual characteristics in the subtests.

Anderson, W.F. "Relation of Lorge-Thorndike Intelligence Test Scores of Public School Pupils to the Socio-Economic Status of Their Parents." The Journal of Experimental Education, 1962, 31(1).

The purpose of this paper was to investigate the relationship between the intelligence of fifth and seventh grade students and the social class of their parents. Intelligence was measured by the Lorge-Thorndike Intelligence Test, a test of abstract intelligence. This is a concept which its authors define as the ability to work with ideas and the relationships among ideas. Both verbal and non-verbal tests are included. Social class was ascertained using the Sim's hierarchy of social prestige associated with occupations. Three socio-economic levels were delineated: Group I, upper middle and upper social classes; Group II, middle-working and middle social classes; and Group III, lower working and working classes.

The results of the testing indicated that the Lorge-Thorndike scores were highly related to the social class of the student's family. Higher social class was associated with higher mean IQ's on both verbal and non-verbal factors of the test. Since the mean verbal IQ for the students in Group III was significantly higher than the mean non-verbal IQ, there was no evidence that lower class pupils were more effective on non-verbal items than on verbal.

Billingslea, F.Y. "The Bender Gestalt: A Review and a Perspective." *Psychological Bulletin*, 1963, *60*, 233-251.

From an extensive review of the literature on the Bender-Gestalt, the following conclusions can be made: "(1) The test continues to be popular with clinicians and deserves to remain as an additional tool in his repertoire. (2) It is in great need of universally accepted standard set of designs. (3) The P & S scoring system has proven useful on adult protocols as has Koppitz' modification of it on children's protocols. (4) Reasonably valid MA's can be obtained with it for children 4-12 years and adults with equivalent MA's, but not adolescents and adults with higher MA's. (5) It can be employed as an additional tool in a battery of tests administered to an individual when clues for the possible presence of organic brain pathology are sought. (6) Whether evaluated with objective scores or with some systematic inspection procedure the results tend to discriminate the psychotic from the nonpsychotic and non-psychiatric subject provided their MA's are 13 or above. It does not detect effectively nonpsychotic emotionally disturbed children, however. (7) When the protocols are interpreted symbolically, the clinician must rely almost completely on the validity of his own subjective professional knowledge. (8) The test has not been standardized sufficiently to permit its use as a norm against which to judge other variables. (9) More research is needed on the perceptual contributions of each design and the effects on such perceptions of their sequential appearance in the protocol."

Brim, O.B. "American Attitudes Toward Intelligence Tests." American Psychologists, 20, 1965, 125-130.

This article is an outgrowth of a project under the Russell Sage Foundation which investigated the social consequences of administering standardized ability tests. The author elaborates the various objections which have been raised about testing. He divides the objections into two categories: superficial or apparent criticisms and basic sources of criticisms. The former criticisms are felt to be ones which could be almost alleviated with the proper controls and education. The latter kind of criticisms are harder to alleviate since these deal with more basic issues such as long-range self-esteem, and the issue of equality of all men. He concludes by saying: "Our review of these four fundamental sources of opposition to tests leads to the conclusion that psychologists must be concerned about the society in which tests are used. Testing does not occur in isolation; there is always a social context. Test scores have a social meaning. They have impact on man's self-esteem; they influence his life chances; they engage his deepest political and social attitudes. These forces must be understood as part of the social setting in which intelligence testing is carried on."

Britton, J. "Influence of Social Class Upon Performance on the Draw-a-Man Test." The Journal of Educational Psychology, 45(1), 1954, 44-51.

The relationship between culture and intelligence tests has been well documented, and has led to several attempts to construct tests that are not biased in this respect. The purpose of the present study was to assess the relationship of social class to certain standardized tests of intelligence and to the Draw-a-Man test.

Subjects for the study were 232 white children between the ages of nine and eleven. They attended public and parochial schools in a midwestern community and were classified as belonging either to a high or low socioeconomic group (according to the Warner Index of Status Characteristics). Scores were obtained for all children on the Henmon-Nelson, Otis Alpha Verbal, Otis Alpha Non-Verbal and Kuhlman-Anderson group tests of intelligence, as well as on the Draw-a-Man test.

The results showed a negligible correlation between the Draw-a-Man test and social class (.11), but statistically significant correlations between social class and each of the group verbal and non-verbal intelligence tests (.42-.53).

Bryant, N.D. and Della-Piana, M.M. Critique of Gates Reading Diagnostic Tests. In O.K. Buros (ed.) The Sixth Mental Measurement Yearbook. Highland Park, New Jersey: The Gryphon Press, 1965, 824.

The reviewer feels this test has both good and bad aspects. "One of the strengths of this battery is the studding of suggestions for profile analysis throughout the manual. Even the user of other batteries would gain much from these sections." It contains many subtests which are valuable in identifying reading problems, including things like auditory blending, oral reading, phrase recognition, etc. A weakness of the test is the lack of normative samples, the lack of good reliability data, and the lack of reading comprehension subtest. Because of the lack of good normative data, it is possible for the examiner to misinterpret scores on the test. "If this battery is used as intended, the user must interpret norms where the reference group is not entirely clear, needs to make decisions as to whether a test should be given and in what order, and needs to consider alternative interpretations of test scores. Thus, administering and interpreting this battery requires a sophisticated examiner willing to pay the price of considerable training, formal or informal." The casual user, whether it be a test professional or a teacher, should be wary of using this test. For such a user the Durrell seems to be a more reliable indicator of reading difficulty.

Burnes, K. "Pattern of WISC Scores for Children of Two Socio-Economic Classes and Races." Child Development, 41, 1970, 493-499.

In this study Negro and White boys from lower-class and middle-class homes were given the Wechsler Intelligence Scale for Children (WISC) in order to determine group patterns of intellectual abilities. The subjects for the study were drawn primarily from a large parochial school district which encompasses a metropolitan area in the Midwest. Seventy-eight, eight-year old boys were tested. Socio-economic status was determined by the occupation of the head of the household.

The entire WISC test of ten standard and two supplementary subtests were given. The results showed significant differences among subtest scores. The lower-class subjects of both races obtained the lower scores as expected, but the configurations of scores for each group were very similar. A few differences in the patterns were found between socio-economic groups, but not between races.

Churchill, W.D. and Smith, S.E. "The Relationship of the 1960 Revised Stanford-Binet Intelligence Scale to Intelligence and Achievement Test Scores Over a Three-Year Period." Educational and Psychological Measurement, 1966, 26(4), 1015-1020.

The primary objective of this study was to determine the relationship between the 1960 Stanford-Binet Intelligence Scale (S-B) and Lorge-Thorndike IQ's obtained three years later. A secondary objective was to determine the relationship between the 1960 S-B and achievement as measured by the Iowa Test of Basic Skills.

The subjects for the study were 56 members of a seventh grade class in a rural central school. These students had taken the 1960 S-B and the Iowa Test of Basic Skills (Form 2) in third grade, and the Lorge-Thorndike Intelligence Tests and Iowa Tests of Basic Skills (Form 1) in grade 6.

The authors concluded that:

1. The 1960 S-B is a valid measure of "scholastic ability;
2. Group mental tests and comprehensive achievement tests lead to the same prediction;
3. For this small sample, at least, the two IQ tests used could be considered interchangeable.

Deloria, Dennis. "The Stanford-Binet in the Ypsilanti Curriculum. Why?" High Scope Educational Research Foundation.

The author evaluates the Stanford-Binet Intelligence Scale as he defends its use as the key instrument used to assess the affects of the Ypsilanti Cognitively-Oriented Follow Through Curriculum.

The following points are made:

1. The Stanford-Binet (S-B) exhibits high predictive validity for later success in school;
2. The S-B excells in reliability;
3. The S-B measures present ability, not inborn capacity;
4. Though the S-B was normed using middle class white persons, it does predict success in American schools as they currently exist better than any comparable test.
5. The cultural bias of the S-B can be diminished by considering change scores rather than absolute scores;
6. An intelligence test is really only a special kind of achievement test;
7. The variability of S-B scores remains essentially constant as children progress in age.

DiCarlo, L.M. "Critique of Auditory Discrimination Test (Wepman)." In
O.K. Buros (ed.) The Sixth Mental Measurement Yearbook. Highland
Park, New Jersey: The Gryphon Press, 1965. 940.

The test provides a quick and accurate assessment of auditory discrimination among children from 5 to 8 years of age. It takes only a few minutes to administer and is easy to administer and score. The specificity of the task eliminates contamination of performance by auditory memory span. A test-retest reliability on 109 subjects is reported as .91. The information the author presents under validity suggests relationships between auditory discrimination and intelligence, hearing, and speaking and reading, but it does not necessarily support the validity of the test. Auditory discrimination may represent only one of the contributory variables for performance in these other areas. Some deaf individuals who exhibit severe deficit in auditory discrimination do well in these other areas. Moreover, some of the differences between test results and performance, in the other areas, are reported as statistically significant. While the differences may be statistically significant, in some instances they may not be practically significant. Nevertheless, for a quick, inexpensive, easy to score and accurate test of auditory discrimination, the Auditory Discrimination Test is highly recommended.

Eagle, N. and Harris, A.S. "Interaction of Race and Test on Reading Performance Scores." Journal of Educational Measurement, 1966, 6(3), 131-135.

This study examines the relationship between race and performance on two nationally standardized reading tests. The appropriate reading tests of the Iowa Tests of Basic Skills and Metropolitan Achievement Battery were administered to all fourth and sixth grade students in all elementary schools of an urban school district near New York City. Although white pupils earned higher scores than non-white pupils on both tests, the Metropolitan produced significantly greater differences between the races than the Iowa, at both grade levels. White upper elementary children were "favored" by the Metropolitan and Negro children were "favored" by the Iowa.

The authors feel that this finding is of importance since, if an interaction exists between social class or ethnic group and reading test, knowledgeable administrators could use combinations of tests to demonstrate either (a) maximum school reading performance for public relations purposes, or (b) minimal school reading performance, possibly to qualify for more Federal or state compensatory program aid.

Feldman, S. and Weiner, M. "The Use of a Standardized Reading Achievement Test with Two Levels of Socio-Economic Status Pupils." The Journal of Experimental Education, 1964, 32(3), 269-274.

The authors are concerned that, while most tests are standardized for normally distributed populations, the populations most often actually tested are homogeneous. Lower and middle socio-economic level fifth grade students were tested with the Gates Advanced Primary Reading Test and the Gates Basic Reading Test, Level of Comprehension subtest.

The purpose of this study was an analysis of these two tests in an effort to determine comparability and the effect of socio-economic level on test scores. After meeting several difficulties in attempting to use such heterogeneously standardized tests for evaluating the homogeneous groups of subjects, the authors made the following recommendations concerning the use of standardized tests in assessing the reading skills of students in different socio-economic levels:

1. Even though test publishers state that grade scores are comparable in adjacent tests in a battery of reading achievement tests, two points must be considered: (a) the highest and lowest possible grade scores for each test; and (b) whether both tests may be measuring different reading skills. When two different ability groups are given the test, then factors a and b above become even more crucial.

2. Tests should be tried out with a small pilot-group before any large-scale test administration is undertaken.

3. If the purpose of the test user is to distinguish among the pupils' skills measured by the test, then the use of a standardized test with a homogeneous group will very likely not provide the desired results.

Fortenberry, W.D. and Broome, B.J. "Comparison of the Gates Reading Survey and the Reading Section of the Wide-Range Achievement Test." Journal of Developmental Reading, 1963, 7(3), 66-68.

This study looked at the relationship between the group test, the Gates Reading Survey and the individual test, the Wide-Range Achievement Test. The researchers were interested in discovering whether the group test could predict the individual test, thus allowing them to use the group test as a basis for diagnosis rather than having to administer the Wide-Range Achievement Test. High correlations were obtained between the two tests when administered to 98 fourth grade pupils enrolled in elementary schools in Lousiana. The students had IQ's ranging from 83 to 126 with a mean of 103. They came from lower to upper class families. The correlations between GRS section on Speed of reading and the WRA Reading Section was .68; the correlation between the spelling section of the GRS and the WRA reading section was .80; and the correlation between the GRS comprehension section and the WRA reading section was .67. It was concluded that the GRS could be used as a basis for predicting the WRA.

Gage, G.E. and Naumann, T.F. "Correlation of the Peabody Picture Vocabulary Test and the Wechsler Intelligence Scale for Children." The Journal of Educational Research, 1965, 58(10), 466-468.

The purpose of this study was to determine if the Peabody Picture Vocabulary Test (PPVT) could be used as a reliable and valid measure of intelligence when the subjects were handicapped in sufficient extent or nature to warrant their referral for psychological evaluation.

The data for this study were collected from the records of 30 consecutive referrals to the psychological services department of a public school system. Average age for the total group was 106 months.

Product-moment coefficients of correlation were computed between the IQ's obtained by Form A of the PPVT and the Wechsler Intelligence Scale for Children (WISC) IQ's. Correlations significant at the 1% confidence level were obtained between the PPVT IQ and the Verbal Scale, Performance Scale, and Full Scale IQ's on the WISC.

Thus, the PPVT may be found to be a reliable and valid measure where an assessment of "understanding" vocabulary vs. "speaking" vocabulary is desired.

Grotelveschen, A. "Otis-Lennon Mental Ability Test." Journal of Educational Measurement, 1969, 6(2), 111-113.

The Otis-Lennon Mental Ability Test is a revision of the Otis Quick-Scoring Mental Ability Test. The Otis-Lennon Primary I, Primary II, and Elementary I levels are designed to replace the Quick-Scoring Alpha Test; the Elementary II and Intermediate levels are designed to replace the Beta test; and the Advanced level is designed to replace the Gamma test.

The reviewer finds much to commend in the test. The test booklets are well-organized and designed and the test itself is easily administered and scored. The manual contains an excellent discussion of the use of the age and grade norms and the interpretation of test scores. Substantial evidence is provided to indicate a high reliability for the test.

Some criticisms are offered. The distinctiveness of the Primary I level, intended as a downward extension of the Alpha test, is questioned by the reviewer. Since the items in the Primary I level are identical to those in the Primary II, the response mode is the only source of differentiation, and this the reviewer feels is not an adequate base for distinguishing between them. In addition, the technical data for the Primary I level are neither as complete nor acceptable as those provided for the other test levels. The reviewer also questioned the lack of data on validity.

In general, the reviewer concludes that the Otis-Lennon is an outstanding test of its kind.

Himelstein, P. "Research With the Stanford-Binet, Form L-M: The First Five Years." Psychological Bulletin, 1966, 65(3), 156-164.

This article reviews the first five years of research with the 1960 revision of the Stanford-Binet Intelligence Scale (1960-1965). The major areas considered by the reviewer are validity, reliability, sensitivity to extra-test influences, performance of southern Negro children, influence of socio-economic status, diagnostic value, and brief forms.

A major problem in the studies reviewed was the population used; frequently the sample was drawn from retarded or gifted children. This fact decreased the generalizability of the results.

Almost all of the validity studies were concerned with concurrent validity in which the Stanford-Binet was correlated with another test, often a test that just happened to be in the patient's file. The author reports correlations between the Stanford-Binet and the Wechsler Intelligence Scale for Children, the Wechsler Adult Intelligence Scale, the Draw-A-Man Test, the Peabody Picture Vocabulary Test, the Kuhlman Test of Mental Development, the Vineland Social Maturity Scale, the Gesell Developmental Schedule, the California Test of Mental Maturity, the Sequential Test of Educational Progress, the California Achievement Test, and teacher ratings.

The studies revealed little concern for the reliability of the test, the effects of various incentives, and the influence of situational variables, such as "warm" versus "cold" examiners.

In general, the use of the Stanford-Binet short form was found to slightly underestimate the full-scale score. The Stanford-Binet has not been widely employed as a diagnostic tool.

Hirshoren, A. "A Comparison of the Predictive Validity of the Revised Stanford-Binet Intelligence Scale and the Illinois Test of Psycholinguistic Abilities," Exceptional Children, 1969, 35(3), 517-521.

The Illinois Test of Psycholinguistic Ability (ITPA) was developed as a clinical diagnostic test to be used with young children for the identification of specific language disabilities.

The problem of the present study was to determine the predictive validity of the ITPA Total Language Score and of the subtest scores, as well as the predictive validity of the Revised Stanford-Binet IQ, all obtained at the beginning of kindergarten, for school achievement at the beginning of the second grade. For the study, 40 Caucasion children from a heterogeneous neighborhood were tested with the ITPA, the 1960 revision of the Stanford-Binet, and the California Achievement Test (CAT), Lower Primary Form.

The results indicate that the Total Language Score of the ITPA, at least at the kindergarten level, is as valid a predictor as is the Stanford-Binet IQ for school achievement two years later. Performance on the ITPA subtests at the automatic-sequential level is significantly related to performance on all seven of the achievement variables from the CAT. At the representational level of the ITPA, the various subtests are significantly related to various of the CAT subtests. Using stepwise multiple correlation with the ITPA subtests increases the predictive validity of the ITPA. Including the Stanford-Binet IQ as a predictor variable does not improve upon the predictions of future achievement obtained by using the ITPA subtests alone. The ITPA has the added advantage of noting specific areas of language deficits so that remedial programs for individual children may be developed.

Hopkins, K.D., Dobson, J.C. and Oldridge, O.A. "The Concurrent and Congruent Validities of the Wide-Range Achievement Test." Educational and Psychological Measurement, 1962, 22(4), 791-793.

The WRAT was first published in 1946. The reviews of the test were unfavorable because of its questionable validity and norming procedures, and because of its unsubstantiated claims of clinical symptoms suggested by the authors. Testing authorities have not examined the test since that time although it is the second most used achievement test in Psychological clinics. The reason for this seems to lie in the fact that it is easy to administer and it eliminates almost all of the chance variance.

This study compared the WRAT scores on reading achievement with teacher ratings of children's reading ability and the reading sections on the California Achievement Test. This would show the concurrent validity of the WRAT. It was found that with a sample of 501 pupils in grades 1-5, the WRAT and CAT showed good concurrent validity with correlations of from .851 to .906 with teacher ratings and concurrent validity with the CAT of .739 to .856. The results tend to validate at least one portion of the WRAT.

Johnson, G.B. "Factors to be Considered in the Interpretation of Intelligence-Test Scores." The Elementary School Journal, 1953, 1-8.

"There are three sources of potential error to be considered in the interpretation of an intelligence quotient. These are to be found in external factors, which relate to the test itself; in internal factors, which include organic and emotional aspects of the individual being tested; and in factors which may be both external and internal and which include the effect of the individual's environment in general." From the detailed analysis of these sources of error, the author concludes:

"1. Select the tests which most nearly suit your purpose in testing. To make the selection requires a knowledge of individual, group, verbal and performance tests and their statistical foundations.

2. Select the tests which have been demonstrated to be both valid and reliable in testing situations similar to your own. This requires a knowledge of the individual and group differences in your situation. Even then, do not put too much credence in the results of one test.

3. If you use standard norms, realize their limitations. If you find them inadequate, prepare local norms.

4. Whichever test you choose, follow closely the directions for administering it. Practice on yourself often before actually administering it.

5. If the test is not machine scored, score it yourself twice.

6. Administer the test under optimum physical and psychological conditions.

7. With both individual and group tests, observe the pupils for factors which may be significant to efficiency of performance, hence to score interpretation.

8. Condition the testees for, not against, intelligence tests. An initial approach in this direction should be to provide pre-service and in-service training for teachers.

9. Understand that intelligence is a composite of factors, in some of which one person may be relatively strong and others relatively weak.

10. Realize that, even with all these precautions, the intelligence test is still in an early phase of development and that the intelligence quotient cannot be considered as precise, as consistent or as true a value as in a unit of measure from the thermometer or the weighing scale."

Kirk, S.A. and McCarthy, J.J. "The Illinois Test of Psycholinguistic Abilities: An Approach to Differential Diagnosis." *American Journal of Mental Deficiency*, 1961, 66(3), 399-412.

The Illinois Test of Psycholinguistic Abilities (ITPA) was designed by the authors of this article to assess learning dsyfunctions and, in addition, to provide a remedial program for the difficulties thus diagnosed.

The theoretical model given is based upon Osgood's model which is itself an extension of Hull's mediation hypothesis. There are two levels of organization: (1) automatic-sequential (non-meaning) and (2) representational (meaning). There are three psycholinguistic processes:

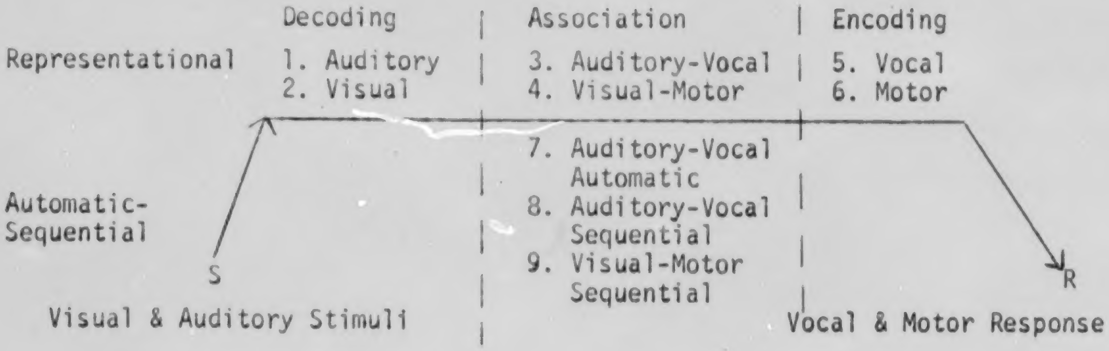
1. Association (ability to manipulate linguistic symbols internally)
2. Encoding
3. Decoding

Four communication channels are utilized:

1. Visual
2. Auditory
3. Motor
4. Vocal

The nine subtests measure the association, encoding and decoding abilities at the representational and automatic-sequential levels, with the tests at the latter level determining disability in less complex tasks. Poor performance on any one of the subtests is construed as the indication of a psycholinguistic defect.

The concept underlying the ITPA is that each clearly defined psycholinguistic area can be tested and those areas that are limiting development can be remediated with specific programs. A clinical model of the nine ITPA subtests is reproduced below:



	Decoding	Association	Encoding
Representational	1. Auditory 2. Visual	3. Auditory-Vocal 4. Visual-Motor	5. Vocal 6. Motor
Automatic-Sequential		7. Auditory-Vocal Automatic 8. Auditory-Vocal Sequential 9. Visual-Motor Sequential	

Knief, L.M. and Stroud, J.B. "Intercorrelations Among Various Intelligence, Achievement and Social Class Scores." Journal of Educational Psychology, 1959, 50(3), 117-120.

In order to obtain information on the relationship of social class to intelligence and achievement test scores, a group of fourth grade students in a Midwestern community were tested over a period of several months. The tests administered were (1) Lorge-Thorndike Intelligence Tests, Verbal; (2) Lorge-Thorndike Intelligence Tests, Nonverbal (Level 3 in both cases); (3) Davis-Eells Games (Elementary Level); (4) Raven's Progressive Matrices; (5) Iowa Test of Basic Skills; and (6) the Warner Index of Status Characteristics.

The following intercorrelations were reported:

Variable	1	2	3	4	5	6
1		.309	.304	.323	.179	.340
2			.571	.645	.405	.568
3				.709	.437	.839
4					.521	.683
5						.450
6						

The authors concluded that their study gave little justification for the use of the Davis-Eells games, Lorge-Thorndike Non-Verbal test, and the Progressive Matrices in conjunction with the Lorge-Thorndike Verbal test for general prediction purposes. However, this information does not negate their usefulness in individual diagnosis.

Lefever, D.W. "Critique of Otis Quick-Scoring Mental Ability Test," in O.K. Buros (ed.) The Sixth Mental Measurements Yearbook; Highland Park, New Jersey; The Gryphon Press, 1965, 362.

The reviewer has several criticisms of the new edition of the Otis Quick-Scoring Mental Ability Tests, many of which are concerned with the rather vague and incomplete manner in which the norms were derived. Other than this, he feels that the most serious weaknesses of the revised tests appear to be the lack of percentile norm tables of any description and the failure to furnish normative data on the comparability of the two new forms for each level. The manuals are very brief and the reviewer feels that detailed suggestions for teachers, counselors and supervisors on the application of the tests to instructional and guidance problems would be helpful. More recent evidence concerning the validity of Gamma is to be desired, as well as more extensive recent data for the predictive power of both Beta and Gamma tests.

The reviewer does note, however, that most of his criticisms are directed at the amount of information furnished to the user of the tests rather than against the quality or value of the tests themselves. The Otis Quick-Scoring Mental Ability Tests, as the title implies, do furnish a short and easily scored indicator of scholastic aptitude. Such a measure, if interpreted with care, can be useful to both teacher and counselor by revealing within fairly broad limits of accuracy the probable level of academic achievement for a majority of pupils.

Littell, W.M. The Wechsler Intelligence Scale for Children: Review of a Decade of Research; unpublished paper, Claremont Graduate School.

This article reviewed the literature concerning the Wechsler Intelligence Scale for Children (WISC) since its publication in 1949. Its purposes were to evaluate the WISC as a measure of various psychological variables and to bring together for the user of the WISC information brought out by the past decade of research.

A lengthy and useful table is presented reporting the correlations between the WISC and other intelligence Tests (as found in various research studies).

The author notes three areas where further research is indicated:

1. The WISC does not have an adequate rationale. Much more thought and effort need to be devoted to putting the WISC on a firm theoretical foundation. At present, both the assessment of the test's content validity and the long process of construct validation are severely handicapped by this lack of an explicit rationale.

2. The lack of investigations of the test's predictive validity in its many common uses is appalling. At present, the test's content and construct validities are not strong enough to support the use of the test without this criterion-oriented validation. It would seem that all possible occasions should be taken to discover experimentally, if the WISC does indeed predict what it is assumed to predict. For example, children are placed in classes for the mentally retarded on the assumption that they will respond to various learning situations in characteristic ways. How well does the WISC predict this response in a well-controlled, experimental situation?

3. Much more systematic attention should be given to investigations of the many practical problems involved in the use of the WISC as a measuring device. There appears to be strong reason to suspect that WISC scores are affected systematically by many variables other than intelligence, but little information about the exact nature of these variables and the relationships involved is available. Especially in need of systematic investigation is the effect on WISC scores of (a) variables in the relationship between the examiner and examinee, (b) the circumstances of the examination, and (c) repeated administrations of the WISC.

Mitchell, B.C. "Predictive Validity of the Metropolitan Reading Readiness Tests and the Murphy-Durrell Reading Readiness Analysis for White and for Negro Pupils," Educational and Psychological Measurement, 1967, 27, 1047-1054.

In the fall of 1964, a large number of pupils in 27 projects were administered a number of reading tests. Among them were the Murphy-Durrell Reading Readiness Analysis and the Metropolitan Readiness Tests. The children were in first grade at the time of these tests: 12,231 children were tested at that time and at the end of the 1964 year, .9497 of the same children were given the reading and spelling subtests of the Stanford Achievement Tests. Correlations between the Metropolitan and Murphy-Durrells tests and the Stanford Achievement test were computed separately for white and black children. There were not differences between the correlations of blacks and whites. The correlations ranged from .26 to .59 which are moderately significant. The authors conclude that these two readiness tests perform their function as well for white children as for black children.

Mueller, M.W. "Validity of Six Tests of Ability with Educable Mental Retardates." Journal of School Psychology, 1968, VI(2), 136-146.

"This investigation was designed to evaluate the empirical validity of six general ability tests, designated predictors, against a number of measures of learning. The six predictor tests were the Stanford-Binet, Illinois Test of Psycholinguistic Abilities, Peabody Picture Vocabulary Test, Pictorial Test of Intelligence, Coloured Progressive Matrices and Primary Mental Abilities Test. Demonstrated learning ability was defined as performance on two achievement tests and four tasks requiring learning within the test situation. Those criteria were the Wide Range Achievement Test, the New York Achievement Tests, the Coding subtest from the WISC, a modification of the Prognostic Reading Test, a paired associate learning task and a simple alternation learning task." One hundred and one educable mentally retarded children between the ages of 6-11 and 10-4 were given these tests over a period of three weeks. "Validity coefficients of the predictor tests against the overall criterion score were PMAT, .79; S-B, .76; PTI, .71; ITPA, .69; CPM, .50; and PPVT, . 42. Comparison of these coefficients indicated that the PMAT, S-B, PTI and ITPA were significantly more valid than the CPM and PPVT. Further comparisons of correlations of the predictor tests with individual criterion tests yielded similar results. A composite score developed by pooling scores of the four learning tasks was as valid as the better predictor tests, taking achievement test scores as the criterion. Optimal multiple correlation was obtained by using scores of the PMAT and S-B." Implications of the study were the following: (1) support for using a combination of one group test and one individual test of intelligence in evaluation of children suspected of being mentally retarded. This study showed the CPM and PPVT as inadequate substitutes for more comprehensive instruments; (2) the battery of learning tasks proved quite valid for the prediction of achievement; (3) the data suggested that prediction of learning ability at this level of age and ability depends primarily on measurement of verbal, numerical and perceptual ability." The latter two implications suggest possible bases for developing new or modifying old tests.

Nelson, C.M. and Hudson, F.G. "Predicting the Reading Achievement of Junior High School EMR Children." American Journal of Mental Deficiency, 1969, 74(3), 415-420.

The purpose of this study was to compare scores on intelligence and diagnostic learning aptitude tests, chronological age (CA), attendance record and number of years in a special class program, as predictors of reading achievement among a sample of junior high school age educable mentally retarded (EMR) children. A secondary purpose was to compare the predictive validity of the Peabody Picture Vocabulary Test (PPVT) and a group intelligence test with that of more elaborate intelligence scales.

The criterion variables for the study were the subtests in the Reading section of the upper primary or elementary level of the California Achievement Test. The level used depended upon teachers' estimates of each student's reading ability.

Predictor variables were drawn from three sources. The first consisted of data on each subject concerning the number of days present, years enrolled in a special class and CA. Intelligence test scores, either the Wechsler Intelligence Scale for Children (WISC) or the Stanford-Binet, provided the second source of predictor variables. Teachers also administered the PPVT (individually) and form Beta of the Otis Quick-Scoring Mental Ability Tests (in a group setting).

The final source of predictor variables was MA scores from the six subtests of the Detroit Tests of Learning Aptitude.

The results of this study suggest that Otis Beta IQ is the best single predictor of junior high school age retardates' reading achievement scores, offering a slight advantage over individual intelligence scales. The Otis IQ was not only significantly superior to PPVT IQ as a predictor of Achievement test scores, but also provided a better estimate of full-scale IQ.

Olson, A.V. and Johnson, C.I. "Structure and Predictive Validity of the Frostig Developmental Test of Visual Perception in Grades One and Three." The Journal of Special Education, 1970, 4(1), 49-52.

The Frostig Developmental Test of Visual Perception, published in 1958 by Marianne Frostig, is composed of five subtests, each of which corresponds to a visual-perceptual ability. These abilities are designated as: (1) eye-motor coordination, (2) figure-ground, (3) form constancy, (4) position in space, and (5) spatial relations. They are not assumed to be the only abilities involved in visual perception, but it is claimed that a definite relationship exists between these abilities and a student's ability to learn and adjust. In addition, Frostig maintains that these abilities are developmentally mutually exclusive.

One of the purposes of the study reported in this article is to test the preceeding assumption. To this end the first grade subjects were given the Frostig test, the Gates Reading Readiness Test, the Metropolitan Readiness Test, and the Olson Reading Readiness Test. The Wechsler Intelligence Scale for Children and the Stanford Achievement Test-Primary I Battery were also administered. When the results of the 35 subtests of these instruments were factor analyzed, four factors emerged: auditory-visual discrimination, verbal comprehension, perceptual organization, and verbal association. Three of the Frostig Subtests (visual-motor, figure-ground, and position in space) were components of the perceptual organization factor; the spatial relations subtest was included in the auditory-visual discrimination factor; and the form constancy subtest apparently did not have a loading of greater than .200 on any of the factors. From this information, the author concludes that the Frostig is an unifactor, rather than a multi-factor test.

The second purpose of the study was to test the predictive validity of the Frostig test for first and third grade reading achievement. In this experiment, the previously mentioned set of variables were again used, this time as predictors of first and third grade performance on the Word Reading and Paragraph Meaning subtests of the Stanford Achievement battery. Of the variables involved, the Frostig test was found to be the poorest predictor of reading achievement of both grade levels.

Pool, D.A. and Brown, R. "The Peabody Picture Vocabulary Test as a Measure of General Adult Intelligence." Journal of Consulting and Clinical Psychology, 1970, 34(1), 8-11.

This study was a search for a rapidly administerable test of general intelligence for adults to be used in large hospitals. The PPVT has not been employed extensively with adults but since it was short, the researchers chose to investigate it. The SS were 150 outpatients referred for psychological evaluation of psychiatric problems, mental retardation, brain damage or potential for vocational rehabilitation. Each S was given the PPVT and also the Dappelt short form of the WAIS. An overall correlation of .81 was found between the two tests. The means were found to be approximately the same in the sub-groups of patients. In the low IQ range (0-59, 60-69), the D WAIS scores were considerably higher than the PPVT. In the higher ranges of IQ the PPVT means were considerably higher than the D-WAIS means; for example, the mean D-WAIS score was 20 points lower than the mean PPVT score. It was shown that although the correlations between the two tests are high, the clinical placement of patients was grossly different for the two tests. Sixty-three percent of the PPVT scores differed by one category or more from the D-WAIS category. Two qualifications were made of these results. (1) The study dealt with PPVT scores only as they predicted D-WAIS scores, and the findings obviously did not bear on the validity of the PPVT; (2) The D-WAIS was not the full WAIS so that there may be differences between the two forms even though they correlate .90. Two major implications were made: (a) comparison of overall means and a visual inspection of a scatter plot of two sets of scores may not readily reveal gross departures from linearity. "This is important to the clinician who deals with individuals and he can't afford to think in terms of overall relations, but must think in terms of 'chances' that a particular score will be grossly misleading;" (b) no matter what is told to parents, teachers and other professionals, there is still a strong tendency for clinicians and psychiatrists to think about IQ scores 'as if' they were WAIS or Stanford Binet scores." In that case, using the PPVT in the lower or upper ranges could do a disservice to the patient.

Rainey, R.G. "A Study of Four School-Ability Tests." The Journal of Experimental Education, 1965, 33(4), 305-319.

The purpose of this study was the evaluation of four school-ability tests: the 1963 versions of the Kuhlman-Anderson, the California Short-Form Test of Mental Maturity, the SRA Primary Mental Abilities Test, and the 1957 form of the Lorge-Thorndike Intelligence Tests. In addition, the Iowa tests of Basic Skills (I.T.B.S.) were administered. The subjects were 2nd, 4th and 7th grade pupils and were designated as belonging to either high, middle or low socio-economic status.

The authors then summarized their results in a series of statements about each test.

The Lorge-Thorndike Test was found to be easy to administer at all levels, from both the students' and testers' viewpoint. The stability of the mean and standard deviation was good at all grade levels in the middle SES area, but poor in the high and low areas. The verbal sections of the test correlated highly with the reading, vocabulary and other language related Iowa Tests; correlations with arithmetic were good, but other tests had better results. The non-verbal section of the test evidenced poor correlations with the Iowa tests when compared with the results obtained from the verbal and total test. The means were highest in the highest SES area and lowest in the low SES area.

The Kuhlman-Anderson Test was easy to administer at all levels and had the added advantage of being short enough to administer during one class period at all grade levels. The mean and standard deviation stability was excellent at all levels and in all SES areas. This test produced the best correlations with the I.T.B.S. in each SES area. The similarity between the means in the high and middle SES areas constituted the major inconsistency of the test.

The California Test of Mental Maturity was not difficult to administer, however, the mean and standard deviation was good only in the high SES area. The language section of the test correlated highly with the verbal subtests of the I.T.B.S. Correlations with arithmetic were higher on the language section than the non-language portions.

The Primary Mental Abilities Test was easy to administer; however, it was the longest of the four tests at each level. The mean and standard deviation stability was the most inconsistent on this test and the greatest variability in all SES areas was produced by this test. The verbal sections of this test correlated well with the verbal subtests of the I.T.B.S. and the total score correlated consistently with all sections of the Iowa Tests. However, none of the Iowa subtests were correlated with the space relations and perceptual speed tests.

As a general conclusion, the authors stated that no one of the tests considered was proven exceptionally inferior or superior.

Reid, W.R. and Schoer, L.A. "Reading Achievement, Social Class and Subtest Pattern on the WISC." The Journal of Educationl Research, 1966, 59(10), 469-472.

This study was concerned with an analysis of the subtest patterns on the Wechsler Intelligence Scale for Children (WISC) for 87 fourth grade males. The purpose was to determine the relationship between the patterns and reading achievement and social class.

Though it is generally assumed that the lower-class child is at somewhat of a greater disadvantage on certain types of test items than on others, no significant interactions were found between subtest performance and social class. As a matter of fact, all social class effects and interactions involving social class were non-significant.

However, scores on the three verbal scale subtests of the WISC (Arithmetic, Similarities and Digit Span) and one Performance Scale subtest of the WISC (Picture Completion) were found to be significantly related to reading achievement.

Scherer, I.W. "The Prediction of Academic Achievement in Brain-Injured Children." Exceptional Children, 1961, 103-107.

A sample of 46 brain injured children (average age five years, four months) was given a battery of psychological tests, and in addition, ratings were obtained based on test adjustment, presence of qualitative signs related to brain damage, general emotional adjustment, social maturity and physical status (motor efficiency, speech, vision and hearing). Patients were retested from one year, seven months to nine years, ten months later (average interval five years, two months), and a measure of their academic status in the basic skills of reading, spelling, and arithmetic was obtained.

The value of the above ratings and the Stanford-Binet IQ for predicting academic achievement was estimated either by chi-square or by the method of sequential analysis. Despite the numerous criticisms about the use of the Stanford-Binet with brain injured children, it was the only variable which could predict academic achievement. None of the other factors which had been thought to be related to academic achievement, i.e., social adjustment, test adjustment, organic traits, emotional adjustment, and physical status were of any value.

Silverstein, A.B. "Reappraisal of the Validity of WAIS, WISC, and WPPSI Short Forms." Journal of Consulting and Clinical Psychology, 1970, 34(1), 12-14.

The purpose of this study was to reappraise the validity of all possible short forms of two, three, four, and five sub-tests.

Data from the Wechsler Adult Intelligence Scale (WAIS), Wechsler Intelligence Scale for Children (WISC), and Wechsler Preschool and Primary Scale of Intelligence (WPPSI) standardization samples were taken from the three test manuals.

The data for each test were averaged across age groups before proceeding with the analysis of sub-test intercorrelations and reliabilities. This was done in order to achieve more stable results with less computational labor and because the samples used in most studies contained subjects from more than one age group.

The data were then subjected to a formula which took subtest unreliability into account and the results were compared with those obtained by using McNemar's formula for determining the validity of all possible short forms.

The corrected formula gave lower but more realistic correlations with the full-scale tests. .46 of the 120 best short forms selected by the corrected formula differed from those selected by McNemar's formula and vice versa.

Smith, A.E. "Otis-Lennon Mental Ability Test," Journal of Counseling Psychology, 1970, 17(1), 91-92.

The series comprising the new Otis-Lennon Mental Ability Test provides for consistent testing of intelligence in grades K-12. The purpose of the series is "to provide comprehensive, carefully articulated assessment of the general mental ability, or scholastic aptitude." A single score reflecting the student's ability to reason with verbal and symbolic content is obtained. No claim is made for measuring innate intelligence. The items resemble the tasks required of students in the schools of this country and assume that "all pupils have had substantially equal opportunity to learn the types of things included in the test," and all are equally motivated. If the students do poorly on the test they will have difficulty in school and probably for the same reasons. The tests attempt to predict academic success and hence sample broadly from academic material. They attempt to measure "learned or developed abilities in the broadest sense."

No reading is required in the first three levels and there is a smaller percentage of verbal items than previously in the upper level tests. Such care taken to reduce the effects of reading handicaps on the student's performance is commendable.

The reviewer has some questions about the distinction between the Primary I and Primary II levels. He also suggests further research on the stability and power of the tests since the initial studies were conducted with somewhat above average students.

Stake, R.E. and Hastings, J.T. "The Stanford Achievement Test Battery," Personnel and Guidance Journal, 1964, 43(10), 178-184.

The 1964 edition of the Stanford Achievement Test Battery is stratified in five levels for grades 1-9. At each level, verbal comprehension and skills in rhetoric and quantification are emphasized. For younger pupils there is considerable attention to phonics; for older pupils there are many items devoted to concepts taught in general science, social studies, and advanced arithmetic classes. Determination of whether or not the tests contain appropriate content is in large part a responsibility of local school officials. The Manuals for the Stanford Achievement Tests are well organized to help local officials decide on the appropriateness of content.

The 1964 batteries are longer than the 1963 batteries and the items for the 1964 Edition seem to be more difficult. There is some evidence of the influence of the new curricula, especially in science and mathematics, but school people who have supported innovation in curriculum are likely to have reservations about the item content and the emphasis on grade-equivalent scores.

For the teacher who has to score his own tests, scoring aids packaged with the Stanford Tests are very helpful. The reliability of the sub-tests appears to be on a par with previous edition and they are generally as high as those for any of the currently available, standardized achievement tests. For "knowledge of validity" the authors include a description of the sampling of content, and they put all emphasis upon the user's judgment regarding appropriateness of content for his school.

The arrangement for profiling students' scores on the front of the test booklet or on a separate sheet is attractive and the method of profiling is easy to execute. However, the user should be wary since the use of stanines and the size of intercorrelations may aid over-interpretation.

It seems safe to conclude that if local instructors endorse the content coverage, the Stanford Tests will do as effective a job of measuring elementary school achievement as any standardized battery currently available.

Weener, P., Barritt, L.S., and Semmel, M.I. "A Critical Evaluation of the Illinois Test of Psycholinguistic Abilities." Exceptional Children, 1967, 33(2), 373-380.

This article attempts, as the title suggests, to critically evaluate the Illinois Test of Psycholinguistic Abilities (ITPA), an important instrument because it is the only standardized test available which claims to identify the psycholinguistic abilities and disabilities of children. An interesting feature of the article is a rebuttal, by one of the authors of the test, of the criticisms leveled at the test by Weener, *et. al*., and a counter-refutation of these arguments by the authors of this article. Only the main article will be abstracted here.

The ITPA contains nine subtests which evaluate various psycholinguistic levels of organization, channels of communication, and processes. It is intended for use with children between the ages of two and one-half and nine. Most of the criticisms of the authors of this article are directed toward the standardization procedures and statistical characteristics of the test.

The subjects in the standardization sample were 1,100 children between the ages of 2-0 and 9-0, with IQ's between 80 and 120. Children with serious sensory or physical handicaps, Negroes and parochial school students were excluded from the sample. The authors maintain that such a sample limits the generalizability of the normative data.

The reliability of the sub-tests is, according to Weener, *et. al*., too low for adequate prediction. The very small differences in the test-retest intervals (average mean difference = 2 weeks) used for concurrent and predictive validity assessment led the authors to doubt whether, in fact, two different kinds of validity were actually evaluted. In assessing content validity, internal consistency coefficients were reported to be approximately .75 for each age group. In evaluating construct validity, mental age, social class, birth order, and number of siblings were found to be significantly related to performance on the ITPA. In general, the authors felt that the reliability and validity of the test were not, as yet, adequately established.

Finally, Weener, *et. al*., maintain that the nine sub-tests are not integrated adequately by the test's theoretical model. In addition, the model fails to specify the nature of the relationships among the sub-tests or between sub-test performance and other relevant behavior.

The above arguments are then answered by J.J. McCarthy, one of the authors of the ITPA, and his statements are, in turn, refuted by Weener, *et. al*.

Yates, A. "Critique of Otis Quick-Scoring Mental Abilities Tests," in O.K. Buros (ed.) The Sixth Mental Measurements Yearbook; Highland Park, New Jersey: The Gryphon Press, 1965, 362.

This new form comprises three tests: the Alpha Short Form is designed for grades 1-4; Beta, suitable for grades 4-9, is a revision of the Intermediate Examination of the Otis Self-Administering Tests of Mental Ability; and Gamma, intended for high schools and colleges, is a revision of the Higher Examination of the older series.

The avowed purpose of the tests is to measure mental ability defined as 'thinking power or the degree of maturity of the mind.' In making up the tests the author's aim was to choose items which depended as little as possible on schooling, except that in the Beta and Gamma tests questions on vocabulary and arithmetic reasoning, recognized as being largely measures of achievement, are included.

The reliability coefficients quoted for these tests are not strikingly high. Therefore, the results of applying such a test should be interpreted cautiously. The evidence concerning the validity of the test for predictive purposes is somewhat slender. It is doubtful whether, for the normal purposes of classification and guidance within a school, teachers are likely to find the tests more serviceable than measures of attainment and their own judgments of their pupils' progress. The tests are obviously serviceable instruments, however, for the purposes of course classification when this had to be carried out without access to relevant information about children's previous educational progress.

INFORMATION BANK FOR
REMEDIAL ARITHMETIC

These materials are meant to be used as abstracts or summaries, highlighting the major points of the articles or presenting only the most relevant normative information. They should be referred to in the same manner as one would refer to a journal such as Psychological Abstracts. More complete information on these sources, or sources not included here, may be found in your library.

This information bank is divided into four sections, as follows: (1) References directly related to this problem; (2) Auxiliary References; (3) Descriptive and normative data about variables; and (4) Test critiques, validation studies, etc.

Atkinson, R.C. "Beverly: The Computer is a Tutor." Readings in Psychology Today. Del Mar, California: CRM Books, 1969, 61-67.

The Stanford project began in 1964 with the purpose of developing and implementing computer-assisted instruction courses in reading and mathematics. There are three kinds of computer-assisted instruction programs in use. The drill and practice systems present a fixed linear sequence of problems. The errors made by the students can be corrected, but the computer program is not modified by the answers given by the students. This system issued for remedial 4th, 5th and 6th grade arithmetic and language arts all over the country with the central computer at Stanford. The dialogue system provides the richest interaction between student and machine. Natural language responses can be used and the student is free to ask questions. These are in the formative stage of development. The tutorial programs can modify the sequence of material by a single response of the student. The program is limited in that there are only a certain set of possible responses.

The first program Stanford developed was a reading program. It was set up so 16 students could be on the computer at the same time. Cathode ray scopes were used as terminals. This program was a tutorial program. The program was tested on 1st grade, culturally deprived students at a nearby school. Half the children received the CAI while the others did not. The CAI group initially began by receiving training only a few minutes per day. The time increased after six weeks to 20 minutes and at the end of the year it was 30 minutes. There was no problem with attention span. At the end of the year the two groups differed significantly on almost all the reading achievement tests, including the California Reading Test, the Gates-MacGinitie Test and the Hartley. All students gained in the program, although the fastest students gained most. There were no sex differences.

Austin, M. "Computers in Mathematics Education." Audio-Visual Instructor, 1969, 14(5), 44-45.

The author maintains that "recognizing the value of such devices (computers) in the classroom, being aware of the tremendous student interest in them, and knowing the enormous influence of computers upon working and living environments of our society, the task of mathematics education is that of determining how the curriculum can be expanded and improved."

The necessities for utilizing computers in the classroom include a teacher who has had an opportunity to become familiar with the basic characteristics of a particular computer and who is flexible enough to be willing to learn more with the children. However, it is not necessary that the teacher be an expert in computer hardware and data processing.

The students need some basic ideas about computers. However, they do not need courses in computer theory and flowcharting or an extensive mathematics preparation. There is no reason, therefore, to limit computer-assisted instruction to an intellectual elite.

The advantages of utilizing computers in the classroom include the natural work habits that are fostered: neatness, organization, thinking things through ahead of time, consideration of others, and a spirit of experimentation.

The author concludes by noting that "we cannot consider our educational program to be complete until we know how best to use these gentle machines to help our children meet the demands of the age in which we live and which they will inherit and improve. We cannot envision the problems of tomorrow but our obligation is to equip these children with the means of solution."

Buchman, A.L. "The Use of Calculators and Computers in Mathematics Instruction in New York State High Schools." School Science and Mathematics, 64(5), 1969, 385-392.

The author discusses, among other things, factors which may accelerate the present moderate growth in the number of high schools using computers in mathematics instruction. These include the fact that more teachers have backgrounds in computer mathematics either through state-sponsored workshops or National Science Foundation Institutes. In addition, there is a greater availability of textbooks suitable for use in courses in high school computer mathematics. The increased use of computers in many fields has caused community pressure for their use in education. Finally, the continued decrease in price of small computer systems has been an important factor in their increased use.

Crawford, A.N. "A Pilot Study of Computer-Assisted Drill and Practice in Seventh Grade Remedial Mathematics." California Journal of Educational Research, 1970, 21(4), 170-181.

The subjects in this project were 19 disadvantaged seventh grade students in Los Angeles. The investigators were attempting to assess the effect of computer-assisted instruction on the basic arithmetic achievement of the students. For this purpose, drill and practice lessons on the computer were made available to the students in addition to their regular classroom instruction in mathematics. The arithmetic section of the Wide Range Achievement Test was used as a pre and post test.

The following conclusions were drawn from the study:

1. Experimental group students showed significant gians in Wide Range Achievement Test scores from pre-test to post-test. No significant differences were found, however, between the post-test scores of the experimental and control groups.

2. Experimental group students achieved significant gains when measured by an internal test directly related to the instructional content of the programmed materials.

3. The eight week experimental period was not of sufficient duration to permit a meaningful evaluation of changes in student achievement.

4. The attitudes toward mathematics of students who worked on the computer were improved.

5. Programmed instructional content was generally suitable for these underachieving, disadvantaged students in terms of difficulty and reading level.

6. Malfunctions of the equipment, generally caused by problems in the telephone line, were troublesome.

7. The preparation of personnel to use the programmed content as an instructional aid was inadequate.

8. Despite some efforts on the part of the staff, parents were not sufficiently involved in the program.

9. The assigned hours of 7 a.m. to 9 a.m. were not conducive to regular attendance.

Forsythe, A. "Mathematics and Computing in High School: A Betrothal." Mathematics Teacher, 1964, 57(1), 2-7.

The author supports the use of the computer in mathematics education by all students. She concurs with the SMSG ad hoc Committee on Computing; "The number of individuals who will work with or be directly affected by digital computers in the next decades will be so great that the entire high school population needs to learn something about computers."

She recognizes that another philosophy of computer use would favor experience with computers for the college capable. The remainder of the article describes one such program in which 12th grade students were taught analytical geometry by computer.

Gipson, Joella. Use of Computer-Assisted Instruction in Mathematics for Disadvantaged Seventh Grade Youth, 1971. (ERIC)

This paper reports on a pilot study conducted to determine the effectiveness and utility of a computer-assisted drill program in mathematics with disadvantaged seventh graders. The instructional materials used were Suppes' drill and practice lessons. Twenty students were chosen to participate in the study for a two-month period. At the completion of the program each student was interviewed and given a written questionnaire to complete. Pretest scores were used to assign students to certain "concept blocks." Each student was then branched to one of five levels based on their performance on a non-standardized internal pretest. Teachers received daily analyses of each student's work and each student received a printout of the day's lesson. Concepts studied by the students ranged from addition and subtraction of whole numbers to addition, subtraction, multiplication and division of fractions and decimals. Results of an analysis of available data indicated that although students achieved significant gains when measured by an internal test directly related to the instructional content, they did not achieve significantly more as measured by scores on the Wide Range Achievement Test. There seemed to be evidence that the student's interest in mathematics increased and the programmed materials did seem to be appropriate in terms of level of difficulty and reading.

Goodlad, J., O'Toole, J. and Tyler, L. Computers and Information Systems in Education. New York: Harcourt, Brace and World, 1966.

The authors delineate the advantages of using the computer in mathematics classes as follows: (1) provision for the use of mathematical models, (2) gains in the understanding of problem analysis and (3) acquisition of computing skills.

The remainder of the space allotted to mathematics education is devoted to a summary of events and projects that encourage the use of computers in mathematics education.

R.B. Harvey, "Grade Seven and a Computer," School Science and Mathematics, LXVII (February 1968), 91-94.

GEOGRAPHIC LOCATION: Ralston DND School, Ralston, Alberta, Canada

SUBJECT AREA:

GRADE LEVEL: 7

NO. OF SUBJECTS: 12

COMPUTER USED: British Model, circa, 1959

COMPUTER LANGUAGE: Simple Code

FINANCES:

REMARKS: Objective: To present a general picture of how a computer computes, compare its operation to that of a mechanical calculator and show how the memory works.

"High School Time-Shared System." Datamation (January 1969), 148-149.

GEOGRAPHIC LOCATION: Altoona, Pennsylvania School District

SUBJECT AREA: Algebra I and II

GRADE LEVEL: 7-12 (16 junior and senior high school)

NO. OF SUBJECTS: 4,000

COMPUTER USED: GE 225

COMPUTER LANGUAGE: Algol, Basic, Fortran, Raes

FINANCES: Each school pays $300/month

REMARKS: Increase in SAT scores noted after use of computer in mathematics

K.W. Kelsey, "Exercises in Computer-Assisted Physics and Mathematics," *School Science and Mathematics*, LXVII (February 1967), 119-123.

GEOGRAPHIC LOCATION: University of Minnesota High School, Minneapolis, Minnesota

SUBJECT AREA: Mathematical Physics (18 exercises)

GRADE LEVEL:

NO. OF SUBJECTS:

COMPUTER USED: GE235

COMPUTER LANGUAGE: BASIC

FINANCES: Time shared with Dartmouth Computer

REMARKS: Attempted to integrate secondary science and mathematics in laboratory exercises.

E.B. Kerr and H.F. Rahmlow, "Computer-Assisted Mathematics Instruction in Small Schools," AV Instruction, XIV, (February 1969), 24-26.

GEOGRAPHIC LOCATION: Cascade, Idaho

SUBJECT AREA: Basic Mathematics (21 units)

GRADE LEVEL:

NO. OF STUDENTS:

COMPUTER USED: IBM-360, Model 67; teletype Model 33 ASR terminal

COMPUTER LANGUAGE: FORTRAN

FINANCES: Used facilities of Washington State University

REMARKS: Makes provisions for high quality education in small, remote rural schools.

LaFrenz, D. and Kieran, T. "Computers for All Students--A New Philosophy of Computer Use." School Science and Mathematics, 1969, 69(1), 39-41.

The authors consider the possible uses of the computer in the teaching and learning of mathematics. Three philosophies are distinguished The first advocates computer-assisted programmed instruction in which the computer is looked upon as a very large and complex programmed learning device and acts as a highly responsive 'teaching machine' working with individual students.

The second approach offers a course in computer science and technology in which students learn computer programming and consider the logical design of computers. These courses are usually limited to potential engineers and technologists and other select students.

The third philosophy advocates a computer oriented approach to advanced mathematics. Here the advanced student studies mathematical ideas using iterative procedures with the computer to function as a tool. Although this approach requires skillful programming, it does allow mathematical ideas to be studied which otherwise might not be considered.

The authors note that each of the above philosophies limit the use of the computer to selected individuals. They propose instead that all secondary students should use the computer in learning mathematics within the regular curriculum. The purpose of such a philosophy is not to teach computer science, but to teach enough programming skills so that any student can use the computer as a tool to help him achieve various objectives of mathematics education. They argue that such an approach enhances mathematical learning because using the computer as a calculating tool allows the by-passing of time consuming and difficult calculations and gives the student a more complete understanding of the computational process as well.

G. Lopez, "Algebra and Physics Taught by Teletype," CTA Journal, LXIV (March 1968), 10-12.

GEOGRAPHIC LOCATION: Santa Barbara High School District, Santa Barbara, California

SUBJECT AREA: Algebra II, Physics

GRADE LEVEL:

NO. OF SUBJECTS: 6 classrooms

COMPUTER USED: Teletype model 33ASR--time-shared from Computer Resource Center-GE TEMPO

COMPUTER LANGUAGE: Basic

FINANCES: $81,000 Title III ESEA Grant

REMARKS: Conversation with the computer is typed out on a roll of clear acetate feeding through the page printer of the teletype; the acetate is projected on a screen.

Martin, D.L. "Elective in Mathematics," Mathematics Teacher, LX (December 1967), 866-869.

GEOGRAPHIC LOCATION: Morgan Junior High, Shoreline, Seattle, Washington

SUBJECT AREA: "Mathematical Machines" -- enrichment

GRADE LEVEL: 7-9

NO. OF STUDENTS: 32

COMPUTER USED: IBM 7090

COMPUTER LANGUAGE: FORTRAN

FINANCES: Used computer in computer center of school district

REMARKS: An "introduction to devices man has invented to speed his arithmetic calculations." Considers abacus, soroban, slide rule, adding machine and computer.

McGrath, K. "Computer-Oriented Mathematics," Texas Outlook, L, (January 1966), 34-35.

GEOGRAPHIC LOCATION: Corpus Christi, Texas

SUBJECT AREA: Problems that especially related to computer solutions

GRADE LEVEL: 12 (B average required)

NO. OF SUBJECTS: 4 classes

COMPUTER USED: IBM 440

COMPUTER LANGUAGE: FORTRAN

FINANCES: Used District's computer

REMARKS: Purpose - To provide a good one-semester for the senior student who is orienting himself toward a scientific or technical career.

Preliminary Report and other unpublished material from CAI Laboratory in Mathematics and Science, 7618 Wyandotte Street, Room 214, Kansas City, Missouri 64114.

GEOGRAPHIC LOCATION: Bingham Junior High, Kansas City, Missouri

SUBJECT AREA: 8th grade math in a unified math and science curriculum

GRADE LEVEL: 8

NO. OF STUDENTS: 660

COMPUTER USED: IBM 1500

COMPUTER LANGUAGE: APL and COURSEWRITER II

FINANCES: HEW Title III

REMARKS: Most materials are supplementary and for enrichment purposes

"Project LOCAL Finds Computer-Assisted Instruction Effective," Data Processing for Education (February 1969).

GEOGRAPHIC LOCATION: Westwood, Massachusetts Senior High School (and four other communities)

SUBJECT AREA: Algebra II

GRADE LEVEL: 11

NO. OF STUDENTS: 5 schools

COMPUTER USED: PDP-8

COMPUTER LANGUAGE: TELCOMP

FINANCES: ESEA Title III

REMARKS:

S. Rounds. "Fifth and Sixth Graders Program A Computer," _Instructor_, LXXVIII (April 1968), 53.

GEOGRAPHIC LOCATION: Lakewood, Ohio

SUBJECT AREA: Enrichment-Summer Course

GRADE LEVEL: 5-6 superior students

NO. OF SUBJECTS: 5-6 superior students

COMPUTER USED: GE-265

COMPUTER LANGUAGE:

FINANCES: Used facilities of Cleveland GE computer center

REMARKS: Purpose was to acquaint children with this area as a possible vocation and help them understand the limitations and capabilities of computers.

Schilhab, E. "Digital Computing Drops Into the Curriculum Pond," Texas Outlook, 1967, 51(5), 27.

The author encourages the use of the computer in the classroom since it offers opportunities to:

1. Logically plan an attack on a problem area--an attack which provides a possible solution or strategy.

2. Discover problems in attempting to solve other problems.

3. Think creatively in order to arrive at a solution to a problem.

4. Carry through a project from start to finish.

5. Anticipate and plan for events.

6. Algorithmically progress from one step to the next--from the simple to the more complex--until a final and substantial result is received.

7. Use simple, basic and available capabilities to successfully accomplish a sophisticated set of conditions or actions for which single capabilities do not exist.

His conclusions are: "In considering the place of 'computing' in the curriculum, one suggestion would be to permit advanced mathematics classes to have access to a computer to solve their more sophisticated problems. Computer programming may be taught as a separate course, but most frequently it is used as an aid to problem solving.

The computer permits study with more depth and thus provides students the opportunity to learn more mathematics. Techniques in computing, an enrichment activity in computer appreciation could be presented to other mathematics students. This course would exist to familiarize students with the potential of the computer."

Zoet, C.J. "Computers in Mathematics Education." Arithmetic Teacher, 1969, 62(11), 563-567.

The author delineates several levels at which a computer might be used in conjunction with a mathematics program in a secondary school. These include:

1. To let the students know about computers--their impact on modern society and on mathematics.

2. To enable a student to understand the concepts involved in the design of a computer.

3. To develop a student's ability to use a particular computer in a manner that emphasizes its basic concepts and its potential for use.

4. To develop a student's ability to use a computer to solve some problems in mathematics in order that he can become aware of its potential and the strategies enlisted in using it to solve mathematics problems.

5. To develop the student's ability to use a computer to provide additional insight into some of the problems studied in classes such as advanced algebra.

6. To use a computer as an integral part of the teaching of advanced algebra (or other classes)--with all students required to use it on certain phases of the class.

7. To teach mathematics by programming the computer to interact with individual students in a fashion designed to achieve some particular behavioral objective.

Junior High School Information - Fair City

1. Margery Daw Junior High School

1763 Washington Street
Phone: 647-2981

Opened 1951, Addition 1961

9/71: Teaching Stations*	29
Classrooms in Use	25
Portables	1
Enrollment	928
Teachers	33

Site: 19 acres

2. Hiram Gordon Junior High School

497 Lincoln Avenue
Phone: 739-2471

Opened 1958

9/71: Teaching Stations*	20
Classrooms in Use	17
Portables	0
Enrollment	621
Teachers	23

Site: 23 acres

3. Elsie Marley Junior High School

9006 Roosevelt Drive
Phone: 748-0291

Opened 1960, Addition 1964

9/71: Teaching Stations*	34
Classrooms in Use	28
Portables	3
Enrollment	1034
Teachers	40

Site: 25 acres

4. Polly Flinders Junior High School

731 Adams Street
Phone: 753-7026

Opened 1940, Addition 1953

9/71: Teaching Stations*	24
Classrooms in Use	20
Portables	2
Enrollment	934
Teachers	31

Site: 11 acres

5. William McTrimbletoe Jr. H.S.

441 Jefferson Circle
Phone: 603-2780

Opened 1968

9/71: Teaching Stations*	27
Classrooms in Use	22
Portables	0
Enrollment	723
Teachers	32

Site: 30 acres

6. Robert Barnes Jr. High School

776 Garfield Avenue
Phone: 749-2142

Opened 1947

9/71: Teaching Stations*	18
Classrooms in Use	15
Portables	2
Enrollment	687
Teachers	22

Site: 10 acres

7. John Watts Junior High School

351 Madison Street
Phone: 697-2000

Opened 1955

9/71: Teaching Stations*	19
Classrooms in Use	16
Portables	1
Enrollment	792
Teachers	23

Site: 12 acres

Kagan, Jerome and Moss, H.A. "Parental Correlates of Child's IQ and Height: A Cross-Validation of the Berkeley Growth Study Results," Child Development, 1959, 30, 325-332.

"It is suggested that maternal education is a good predictor of IQ score in both sexes because level of education may be a sensitive index of the mother's concern with her child's intellectual development. That is, level of maternal education may be positively correlated with (a) the degree to which the mother rewards and encourages intellectual development in the child and (b) the degree to which the child perceives that the mother values intellectual skills and activity. Since the mother's contact with the child during the preschool and early school years tends to be more extensive than that of the father, it is plausible to expect that maternal concern with intellectual development will have a stronger influence on the child's desire to master intellectual skills than similar concern on the part of the father. The fact that maternal education predicts girls' IQ better than boys' IQ might be anticipated since a daughter is more apt than a son to identify with the values of the mother. Previous research by the authors tends to support these hypotheses for ratings of maternal concern with intellectual development during the child's first three years showed a significant, positive relationship, for girls only, with both achievement fantasy and increase in IQ during the years 6 through 10."

Laurent, James A. Do Pupil Race and/or School Racial Balance Affect Academic Performance? Bulletin; December 1970. (ERIC)

The purpose of this study is to discover the effects of pupil race and racial balance in schools on educational achievement. A brief review of pertinent background factors and related research literature is presented, followed by an explanation of the study itself. Subjects were one hundred and sixty black and white students in the Tacoma, Washington, public schools, who ranged from primary to junior high school levels. Of the 96 four-group comparisons of variables, 32 at each level, only four showed significant differences. Three of the four were racial effects. Caucasians scoring higher than Negroes in primary mathematics, intermediate language arts, and intermediate composite. No school effects were indicated at any level. The sole interaction effect indicated that Caucasians in nonsegregated schools scored higher than Caucasians in de facto segregated schools on the primary composite. Results of the study suggest that neither pupil race nor racial composition of school per se, considered alone or interactively, seemed to have a substantial effect on academic performance when other relevant variables were controlled. (ERIC)

St. John, Nancy. "Thirty-Six Teachers: Their Characteristics and Outcomes for Black and White Pupils." American Educational Research Journal, 1971, 8(4), 635-648.

The study was part of a larger investigation into the achievement and attitudes of children in interracial sixth grade classrooms in a large Northern city. Eighteen schools were randomly drawn from cells in a matrix representing the racial and social class distribution of those elementary schools in the city with five or more black sixth graders. Two classrooms were selected from each school (again randomly). The final sample included all 956 children in these 36 classrooms, of whom 497 were White, 411 Negro, and 48 of other ethnic backgrounds (Chinese, Puerto Rican, etc.). The classrooms varied from 7 to 100 in the percentage of black children enrolled and from lower to middle in mean socioeconomic status (SES). School racial mixture and SES were to a degree independent. Among the schools of lowest SES half were majority white and among the schools with many middle class pupils one was all black.

The 36 classes were observed each for a week by one of a staff of eight. For four days the staff member ("first observer") sat in a backrow desk,kept a running narrative of activities and behavior, scores teacher-pupil and pupil-pupil interaction, interviewed the teacher and administered attitude and sociometric tests to pupils. On one day she exchanged classrooms with the staff member assigned to the other sixth grade room in the same school, ("second observer"). At the end of the week, both observers wrote summary comments on the teachers' academic policies and differential treatment of white and black pupils and scored them on a modified version of Ryans (1960) Characteristics of Teachers Scale. Neither observer had examined pupils' test scores and grades before rating the teacher; a third staff member copied these data from the school records.

The evidence tends to support the proposition that teachers play an important role in the interracial classroom and contribute more to the academic growth of black than of white children. One important finding is the necessity of distinguishing between various dimensions of teaching behavior. A factor analysis of the ratings of teachers on a modified Ryans Scale by observers who spent a week in each classroom produced three clear factors. The label child-oriented was assigned the factor with high weights on kindly, optimistic, responsive, understanding, democratic and adaptable. Task-oriented is shorthand for the factor with high loadings on fluent, broad, stimulating and confident. "Fair" refers to the factor in which ratings on racially fair, generally fair, and systematic were high. Both zero order correlation and multiple regresstion analyses indicate that these factors correlate with pupil outcomes quite differently for blacks and whites.

For blacks, child-orientation or interpersonal competence in teachers contributes significantly to reading growth and seems to lead to improved conduct and attendance and belief in teacher's approval. Fairness in teachers contributes to improved conduct and sense of environmental control, as well as to friendliness from white classmates. Task-orientation or subject competence contributes to black reading growth, but shows a low negative correlation with other variables. The fact that neither the verbal fluency of teachers (as rated by observers) nor the length of their experience is associated significantly with pupil outcomes, whereas subjective but independent ratings by observers are significantly related to outcomes, suggests that future studies of equality of educational opportunity should use the anthropologist's observational tools, rather than depend on more "objective" or quantifiable indices of teaching quality.

California Test of Mental Maturity (Short Form) (1 Form)

Purpose: To provide information about the functional capacities that are basic to learning, problem-solving, and responding to new situations.

Type of Test: Group intelligence

Range: Grades K-16

Time for Administration: 34-48 minutes

Cost: $4.20 per 35 tests, $.10 per scoring key

Subtests: Opposites, Similarities, Analogies, Delayed Recall, Numerical Values, Number Problems, Verbal Comprehension

Levels:
0 - Preprimary
1 - Primary
1H - Spans range between grades 3-4
2 - Elementary
2H - Spans range between grades 6-7
3 - Junior High
4 - Secondary
5 - Advanced

Scores: Scaled; Language IQ, Non-Language IQ, Total IQ

Nature of Test:

The California Short-Form of Mental Maturity consists of seven administrative test units, measuring aspects of mental ability, which contribute to a pattern of summary and derived scores (mental ages, intelligence quotients, standard scores, stanines, and percentile ranks) that are interpreted within a framework of inter and intra-individual differences. In addition to assessing the development of an individual or group with reference to national performance standards at each age level, the test results provide data as to the nature and potential of the abilities possessed by the individual. The Short-Form thus serves both survey and analytical purposes for educators, counselors, psychologists, and employers in a wide variety of testing situations.

California Short Form Test of Mental Maturity - Mean Intelligence Quotients & Standard Deviations of Mental Maturity Series, 1963 Revision & the Stanford-Binet Intelligence Scale Form LM 1960 Revision, Based on the Performance of the Sample Groups

Short-Form Level	Type of CTMM IQ	IQ Means		IQ SD's	
		Cal.	Binet	Cal.	Binet
Level 0	Total	109.4	108.2	14.9	14.8
	Language	109.4		16.6	
	Non-Language	107.6		14.	
Level 1		Cal.	Binet	Cal.	Binet
	Total	110.2	109.2	15.1	15.0
	Language	109.3		15.5	
	Non-Language	109.8		15.5	

Short-Form Level	Type of CTMM IQ	IQ Means		IQ S.D.'s	
Level 2		Cal.	Binet	Cal.	Binet
	Total	103.7	106.7	14.2	13.8
	Language	104.5		15.0	
	Non-Language	102.3		14.2	
Level 3		Cal.	Binet	Cal.	Binet
	Total	105.5	106.5	15.0	14.9
	Language	104.9		14.8	
	Non-Language	105.0		15.5	
Level 4		Cal.	Binet	Cal.	Binet
	Total	108.9	111.8	13.9	14.3
	Language	106.1		14.5	
	Non-Language	109.2		14.0	
Level 5		Cal.	Binet	Cal.	Binet
	Total	113.9	116.4	14.5	14.9
	Language	112.1		14.5	
	Non-Language	111.9		14.1	
All Levels		Cal.	Binet	Cal.	Binet
	Total	108.6	109.7	15.0	15.0
	Language	107.8		15.4	
	Non-Language	107.6		15.0	

California Test of Mental Maturity (Short Form)

Variables		Reliability Short Form	Validity Coefficients of Correlation
Level 0			
I.Q.	Total	.78	.68
	Language	.70	.61
	Non-Language	.59	.56
M.A.	Total	.78	.80
	Language	.70	.74
	Non-Language	.59	.71
Level 1			
I.Q.	Total	.83	.70
	Language	.73	.64
	Non-Language	.72	.57
M.A.	Total	.83	.89
	Language	.73	.87
	Non-Language	.72	.83
Level 2			
I.Q.	Total	.95	.74
	Language	.94	.70
	Non-Language	.89	.61
M.A.	Total	.95	.80
	Language	.94	.76
	Non-Language	.89	.69

Variables Level 0	Reliability Short Form	Validity Coefficients of Correlation
Level 3		
I.Q. Total	.91	.78
Language	.90	.77
Non-Language	.81	.65
M.A. Total	.91	.78
Language	.90	.77
Non-Language	.81	.63
Level 4		
I.Q. Total	.92	.71
Language	.91	.68
Non-Language	.83	.57
M.A. Total	.92	.76
Language	.91	.73
Non-Language	.83	.63
Level 5		
I.Q. Total	.91	.75
Language	.90	.75
Non-Language	.82	.56
M.A. Total	.91	.75
Language	.90	.75
Non-Language	.82	.57
Combined		
I.Q. Total	.91	.73
Language	.90	.69
Non-Language	.82	.60
M.A. Total	.91	.96
Language	.90	.96
Non-Language	.82	.94

California Test of Mental Maturity (Critique)

See Also:

Anderson, H.E. and Leton, D.A. "Factor Analysis of the California Test of Mental Maturity." *Educational and Psychological Measurements*, 1964, 24(3), 513-523.

Norman, R.D. and Daley, M.F. "The Comparative Personality Adjustment of Superior and Inferior Readers." Journal of Educational Psychology, 1959, *50*(1) 31-36.

CRITERION-REFERENCED TESTS
ADDITION

A criterion-referenced test is one that is constructed to yield measurements that are directly interpretable in terms of specified performance standards. These are samples of teacher-made criterion-referenced tests in integer arithmetic for grade seven. An infinite number of comparable forms of this test may be generated by a computer program which randomly selects digits to compose problems in each of the four operations (addition, subtraction, multiplication, and division). Thus the tests are system-wide when given and individual teachers do not have their own tests. Several test forms are provided to allow the teachers to test on a weekly or monthly basis.

Objective: The ability to perform addition, either horizontally or vertically with at least three-digit numbers (where a blank is a legal digit).

Samples:	641 +793	854 +270	407 +936	769 + 58	785 +936

431 + 136 + 361 + 299 =
785 + 87 + 547 + 685 =
92 + 295 + 941 + 36 + 650 =

CRITERION-REFERENCED TESTS
SUBTRACTION

Objective: The ability to perform subtraction, either horizontally or vertically, with at least three-digit numbers (where blank is a legal digit).

Samples:	762 - 47	805 -379	583 -274	970 -621	493 -197
	674 -575	222 -184			

310 - 156 =
517 - 349 =
761 - 555 =

CRITERION-REFERENCED TEST
MULTIPLICATION

Objective: The ability to perform multiplication with at least three-digit multiplicands and two-digit multipliers (where blank is a legal digit).

Samples:	761 x 50	857 x 81	354 x 6	976 x 23	572 x 43
	279 x 7	625 x 90	808 x 44	270 x 55	862 x 97

CRITERION-REFERENCED TEST
DIVISION

Objective: The ability to perform division with at least three-digit dividends and two-digit divisors (where blank is a legal digit).

Samples:	$62\,\overline{)741}$	$27\,\overline{)890}$	$9\,\overline{)797}$	$35\,\overline{)546}$	$85\,\overline{)232}$
	$46\,\overline{)606}$	$18\,\overline{)72}$	$39\,\overline{)158}$	$76\,\overline{)879}$	$8\,\overline{)500}$

Deutsch SES Index

The index of cultural deprivation (C.D.) includes the following three components:

1. The father's occupation on a 4-point scale (or the mother's occupation if no father is in the home).

1 point - unskilled or unemployed
2 points - semiskilled
3 points - skilled
4 points - professional

2. Number of years of education completed by the parents (an average of the two, or the mother's education only if no father is in the home).

3. Density in the home is defined as the number of rooms divided by the number of people living in the home.

> In the number of rooms are included the kitchen and the bathroom. A shared bathroom is counted as half a room.

Occupation and education are given a full weight, but density is given a 1/2 weight. Each component is divided by its standard deviation to equate the variability of all components. In other words, the C.D. rating is the sum of three z scores, except that density is given a 1/2 weight.

The above gives a definitional formula. In actuality, the following computation formula is used:

$$1/2\ (\text{Education}) + 2\ (\text{Occupation}) + 2\ \frac{\text{Rooms}}{\text{People}}$$

Reflected in the computational formula are the following approximate standard deviations from the original Perry School population: 2 for education, 1/2 for occupation, and 1/4 for density.*

An example from an actual case may best clarify the computational formula. If pertinent data are:

Father's occupation: Unskilled factory work (1 point)
Mother's education: 11 years
Father's education: 7 years
Number of rooms: 6
Number of people living in home: 9

$$\text{C.D.} = 1/2(9) + 2(1) + 2(\tfrac{6}{9}) = 8.3$$

---

*A score of 10 or below makes the family a low SES family and thus "culturally deprived."

Gates Reading Tests

(3 Forms)

Purpose: To assess reading achievement

Type of Test: Group reading

Range: Grades K-10

Time for Administration: Varies from 40-90 minutes

Cost: Varies from $1.50-$2.75 per 35 tests

Subtests: Gates Reading Readiness Tests (Grades K-1)

Following Directions
Word Matching
Word-Card Matching
Rhyming
Reading Letters and Numbers

Gates Primary Reading Tests (Grades 1-2.5)

Word Recognition
Paragraph Meaning
Sentence Reading

Gates Advanced Primary Reading Tests (Grades 2.5-3.9)

Word Recognition
Paragraph Meaning

Gates Basic Reading Tests (Grades 3.5-8)

Reading to Appreciate General Significance
Reading to Understand Precise Directions
Reading to Note Details
Reading Vocabulary
Level of Comprehension

Gates Reading Survey (Grades 3.5-10)

Speed and Accuracy
Vocabulary
Level of Comprehension

Scores: Raw; one for each subtest. Gates Reading Survey also includes an accuracy score and a total score.

Nature of Test:

The Gates Reading Tests: The Gates Reading Tests are a unified program for testing reading in the grades. The Gates Reading Readiness Tests are designed to test the degree to which a child is ready to learn to read and also to determine his strength and weakness in each of several important abilities involved in learning to read. These tests are usually given in the early part of the first grade and occasionally near the end of the kindergarten period.

For testing reading in Grade One and the first half of Grade Two, the Gates Primary Reading Tests are provided. These tests measure the level and range of ability in the three most important aspects of reading at the early primary stage. Classes of lower reading ability may use these tests throughout Grade Two.

The Gates Advanced Primary Reading Tests are for use in average classes at midterm and later in Grade Two, and at any time in Grade Three, including the end of the year period. The Advanced Primary series is similar to the Primary series except that it reaches to considerably higher levels of difficulty and will be adequate for able pupils in Grades Two and Three. The Advanced Primary Tests were developed for use at any time during Grade Three. The tests measure range and level of reading vocabulary (Type AWR) and range and level of paragraph comprehension. They do not measure speed of reading.

Primary Word Recognition	Grade Level	Mean Score	Standard Dev.
	2.2	27.7	11.3
	2.4	33.5	13.6
	2.8	38.4	11.9
Primary Sentence Reading	2.2	23.0	11.3
	2.4	26.9	13.4
	2.8	37.4	11.6
Primary Paragraph Reading	2.2	15.1	5.5
	2.4	17.0	7.8
	2.8	21.7	6.8
Advanced Primary Word Recognition	3.2	24.3	9.4
	3.5	29.7	9.8
	3.8	32.3	9.3
	4.2	36.2	9.7
Advanced Primary Paragraph Reading			
	3.2	14.5	5.1
	3.5	19.1	4.7
	3.8	20.4	4.1
	4.2	24.3	6.1
Basic Speed, General Significance	3.8	7.5	3.72
	4.8	10.1	4.02
	5.8	11.2	4.12
	6.8	12.5	4.31
	7.8	16.1	4.23
	8.8	17.7	4.18
Basic Speed, Understanding Directions	3.8	11.1	4.82
	4.8	16.2	4.32
	5.8	13.6	4.41
	6.8	15.1	4.85
	7.8	17.2	4.34
	8.8	18.0	4.36
Basic Speed, Noting Details	3.8	14.1	9.91
	4.8	24.5	10.10
	5.8	24.3	10.70
	6.8	30.5	11.61
	7.8	31.5	11.32
	8.8	27.5	11.21

	Grade Level	Mean Score	Standard Dev.
Basic Vocabulary	3.8	17.4	9.2
	4.8	22.8	9.4
	5.8	28.5	9.6
	6.8	33.6	10.2
	7.8	40.6	10.1
	8.8	42.7	10.3
Basic Level of Comprehension	3.8	16.1	7.2
	4.8	22.7	8.4
	5.8	29.4	8.6
	6.8	34.8	8.8
	7.8	43.6	8.1
	8.8	46.1	7.2
Survey, Speed & Accuracy	3.8	10.3	4.6
	4.8	15.5	6.1
	5.8	18.4	6.4
	6.8	16.1	6.4
	8.8	21.8	7.1
Survey, Vocabulary	3.8	17.2	9.2
	4.8	23.3	9.4
	5.8	28.2	9.7
	6.8	33.3	10.5
	8.8	41.6	10.1
Survey, Level of Comprehension	3.8	14.1	6.8
	4.8	17.7	7.7
	5.8	22.5	8.0
	6.8	26.1	8.6
	8.8	33.7	8.6

Gates Reading Tests

Reliability:

Primary Word Recognition

Grade Level	Reliability Coefficient
2.2	.87
2.4	.88
2.8	.86

Primary Sentence Reading

Grade Level	Reliability Coefficient
2.2	.86
2.4	.87
2.8	.87

Primary Paragraph Reading

Grade Level	Reliability Coefficient
2.2	.87
2.4	.88
2.8	.89

Advanced Primary Word Recognition

Grade Level	Reliability Coefficient
3.2	.84
3.5	.88
3.8	.85
4.2	.86

Gates Reading Tests

Reliability:

Advanced Primary Paragraph Reading

Grade Level	Reliability Coefficient
3.2	.86
3.5	.88
3.8	.87
4.2	.89

Basic Speed, General Significance

3.8	.82
4.8	.84
5.8	.83
6.8	.84
7.8	.82
8.8	.83

Basic Speed, Understanding Directions

3.8	.81
4.8	.83
5.8	.83
6.8	.84
7.8	.83
8.8	.84

Basic Speed, Noting Details

3.8	.84
4.8	.86
5.8	.86
6.8	.87
7.8	.86
8.8	.85

Basic Vocabulary

3.8	.85
4.8	.88
5.8	.87
6.8	.89
7.8	.87
8.8	.87

Basic Level of Comprehension

3.8	.86
4.8	.87
5.8	.88
6.8	.89
7.8	.86
8.8	.87

Survey, Speed and Accuracy

3.8	.82
4.8	.84
5.8	.87
6.8	.83
8.8	.86

Gates Reading Tests

Reliability:

	Survey, Vocabulary
Grade Level	Reliability Coefficient
3.8	.84
4.8	.89
5.8	.86
6.8	.88
8.8	.87
Survey, Level of Comprehension	
3.8	.82
4.8	.87
5.8	.86
6.8	.84
8.8	.88

Validity: Fair to Good

Gates Reading Tests (Critiques)

See Also:

Feldman, S. and Weiner, M. "The Use of a Standardized Reading Achievement Test with Two Levels of Socio-Economic Status Pupils." *The Journal of Experimental Education*, 1964, 32(3), 269-274.

Fortenberry, W.D. and Broome, B.J. "Comparison of the Gates Reading Survey and the Reading Section of the Wide-Range Achievement Test." *Journal of Developmental Reading*, 1963, 7(3), 66-68.

Iowa Tests of Basic Skills

(2 Forms)

Purpose: "To reveal how well each pupil has mastered the basic skills."

Type of Test: Group achievement

Range: Grades 3-9

Time for Administration: 224 minutes

Cost: $3.36 per set of 35
$.04 per scoring sheet

Subtests:
- Vocabulary
- Reading
- Spelling
- Capitalization
- Punctuation
- Usage
- Map Reading
- Graphs & Tables
- References
- Arithmetic Concepts
- Problem Solving

Scores: Raw; one for each subtest, plus:

Language Total (mean of Spelling, Capitalization, Punctuation, Usage)
Work-Study Total (mean of Map Reading, Graphs & Tables, References)
Arithmetic Total (mean of Arithmetic Concepts, Problem Solving) &
Composite (mean of all subtests)

Nature of Test:

The Iowa Tests of Basic Skills provide for comprehensive measurement of the following fundamental areas: vocabulary, reading, the mechanics of correct writing, methods of study, and arithmetic. These skills are crucial to the total educational development of the pupil. They largely determine the extent to which he can profit from later instruction.

The content of each test has been very carefully selected to reflect the best of current curriculum practices. Only items of appropriate difficulty (as shown by preliminary tryouts) have been assigned to each grade level. The arrangement of the various tests has been organized into a logical pattern that yields tests of uniform length and reliability.

Iowa Tests of Basic Skills

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7	
Raw Score Units	M	SD	M	SD	M	SD	M	SD	M	SD
Vocabulary	15.0	7.47	19.1	7.61	20.0	8.51	21.7	9.44	22.9	10.03
Reading	22.4	9.96	29.2	12.73	34.8	14.46	34.7	12.89	36.7	14.12
Spelling	15.3	7.30	19.7	8.34	21.6	8.93	22.7	9.44	22.5	9.92
Capitalization	16.6	7.60	20.5	8.12	22.0	8.26	22.2	7.69	22.1	7.86
Punctuation	13.8	6.40	18.0	7.48	19.2	7.56	19.5	7.68	21.3	7.89
Usage	15.0	7.89	16.1	7.16	17.0	7.10	16.8	6.69	18.0	6.65
Language Total	15.2	6.34	18.6	6.90	20.0	7.05	20.3	6.92	21.0	7.11
Map Reading	9.9	4.05	12.5	5.05	15.8	5.79	15.6	5.90	17.0	6.75
Graphs & Tables	8.9	4.02	10.4	4.48	10.4	4.52	11.7	4.89	13.2	5.04
References	16.3	7.37	22.1	8.35	26.2	11.01	30.3	10.99	29.1	10.87
Work-Study Total	11.7	4.54	15.0	5.29	17.4	6.43	19.2	6.51	19.7	6.85
Arith. Concepts	13.7	6.02	17.0	7.05	19.7	7.73	21.0	8.27	21.2	8.76
Problem Solving	9.6	4.65	12.7	5.46	12.4	5.34	13.2	5.75	13.1	5.30
Arithmetic Total	11.6	4.97	14.8	5.82	16.1	6.04	17.1	6.54	17.1	6.61
Composite	15.2	6.02	19.3	6.99	21.6	7.78	22.6	7.69	23.5	8.11

Iowa Tests of Basic Skills (continued)

Raw Score Units	Grade 8 M	Grade 8 SD
Vocabulary	23.7	9.66
Reading	40.2	14.95
Spelling	24.1	10.47
Capitalization	22.4	8.11
Punctuation	22.1	8.08
Usage	15.8	5.72
Language Total	21.1	7.18
Map Reading	18.0	6.68
Graphs & Tables	13.2	4.73
References	29.1	11.52
Work-Study Total	20.1	6.96
Arith. Concepts	21.8	8.97
Problem Solving	14.5	5.68
Arithmetic Total	18.2	6.88
Composite	24.8	8.23

Iowa Tests of Basic Skills	Grade 3 Reliability	Validity Content & Construct	Validity Concurrent & Predictive
Vocabulary	.89	Very Good	Good
Reading	.90	Very Good	Good
Spelling	.90	Very Good	Good
Capitalization	.89	Very Good	Very Good
Punctuation	.86	Very Good	Good
Usage	.90	Very Good	Good
Language Total	.96	Very Good	Good
Map Reading	.69	Excellent	Good
Graphs & Tables	.75	Excellent	Good
References	.87	Very Good	Good
Work-Study Total	.89	Good	Good
Arith. Concepts	.84	Very Good	Good
Problem Solving	.80	Very Good	Good
Arith. Total	.89	Good	Good
Composite	.97	---	---
	Grade 4		
Vocabulary	.89	Very Good	Good
Reading	.93	Very Good	Good
Spelling	.90	Very Good	Good
Capitalization	.89	Very Good	Very Good
Punctuation	.87	Very Good	Good
Usage	.89	Very Good	Good
Language Total	.96	Very Good	Good
Map Reading	.76	Excellent	Good
Graphs & Tables	.76	Excellent	Good
References	.88	Very Good	Good
Work-Study Total	.91	Good	Good
Arith. Concepts	.86	Very Good	Good
Problem Solving	.80	Very Good	Good
Arith. Total	.90	Good	Good
Composite	.98		

Iowa Tests of Basic Skills (continued)

	Grade 5	Validity	
	Reliability	Content & Construct	Concurrent & Predictive
Vocabulary	.89	Very Good	Good
Reading	.93	Very Good	Good
Spelling	.90	Very Good	Good
Capitalization	.89	Very Good	Good
Punctuation	.87	Very Good	Good
Usage	.88	Very Good	Good
Language Total	.96	Excellent	Good
Map Reading	.80	Excellent	Good
Graphs & Tables	.76	Excellent	Good
References	.92	Excellent	Good
Work-Study Total	.92	Good	Good
Arithmetic Concepts	.86	Very Good	Good
Problem Solving	.82	Very Good	Good
Arithmetic Total	.90	Good	Good
Composite	.98	---	---
	Grade 6		
Vocabulary	.90	Very Good	Good
Reading	.91	Very Good	Good
Spelling	.91	Very Good	Good
Capitalization	.87	Very Good	Good
Punctuation	.88	Very Good	Good
Usage	.87	Very Good	Good
Language Total	.96	Excellent	Good
Map Reading	.80	Excellent	Good
Graphs & Tables	.76	Excellent	Good
References	.92	Excellent	Good
Work-Study Total	.92	Good	Good
Arithmetic Concepts	.86	Very Good	Good
Problem Solving	.81	Very Good	Good
Arithmetic Total	.89	Good	Good
Composite	.98	---	---
	Grade 7		
Vocabulary	.91		
Reading	.93		
Spelling	.91		
Capitalization	.88		
Punctuation	.87		
Usage	.87		
Language Total	.96		
Map Reading	.83		
Graphs & Tables	.78		
References	.92		
Work-Study Total	.94		
Arithmetic Concepts	.88		
Problem Solving	.79		
Arithmetic Total	.90		
Composite	.98		

Iowa Tests of Basic Skills (continued)

		Validity	
	Grade 8 Reliability	Content & Construct	Concurrent & Predictive
Vocabulary	.90		
Reading	.91		
Spelling	.92		
Capitalization	.89		
Punctuation	.88		
Usage	.82		
Language Total	.96		
Map Reading	.83		
Graphs & Tables	.78		
References	.92		
Work-Study Total	.94		
Arithmetic Concepts	.88		
Problem Solving	.79		
Arithmetic Total	.91		
Composite	.98		

Iowa Tests of Basic Skills (Critiques)

See Also:

Churchhill, W.D. and Smith, S.E. "The Relationship of the 1960 Revised Stanford-Binet Intelligence Scale to Intelligence and Achievement Test Scores Over a Three-Year Period." Educational and Psychological Measurement, 1966, 26(4), 1015-1020.

Eagle, N. and Harris, A.S. "Interaction of Race and Test on Reading Performance Scores." Journal of Educational Measurement, 1966, 6(3), 131-135.

Knief, L.M. and Stroud, J.B. "Intercorrelations Among Various Intelligence, Achievement and Social Class Scores." Journal of Educational Psychology, 1959, 50(3), 117-120.

Plack, J.J. "Relationship Between Achievement in Reading and Achievement in Selected Motor Skills in Elementary School Children." American Association of Health, Physical Education, and Recreation Recreation Research Quarterly, 1968, 39(4), 1063-1068.

Rainey, R.G. "A Study of Four School-Ability Tests." The Journal of Experimental Education, 1965, 33(4), 305-319.

Leiter International Performance Scale (1 Form)

Purpose: To assess intelligence (has no spoken instructions)

Type of Test: Individual intelligence

Range: 2-18 years

Time for Administration: Untimed (usually 1 hour)

Cost: $350.00 per set (includes test materials, 100 record blanks, carry case and manual)

Subtests:
Matching
Copying
Picture Completion
Number Estimation
Analogies
Recognition of Age
Classification of Animals According to Habitat
Series Completion
Spatial Relations
Footprint Recognition
Similarities
Memory for a Series

Scores: Single IQ, scaled

Mean = 100   Standard Deviation = 15

Nature of Test:

The Leiter Scale is designed to cover a wide range of functions, similar to those found in verbal scales. A distinctive feature is the absence of spoken instructions, thereby requiring no language. It is appropriate especially for handicapped children and those children for whom culture bias might otherwise be a factor.

Reliability: .90

Validity: Good

Lorge-Thorndike Intelligence Test (2 Forms)

Purpose: To test abstract intelligence, i.e., the ability to work with ideas and relationships among ideas.

Type of Test: Group intelligence

Range: Grades K-12

Time for Administration: 20-34 minutes

Cost: $3.45 per 35 tests, $.45 per manual, $.24 per Scoring stencil, $7.50 per 100 answer sheets

Subtests: Primary Battery (Level 1)

Oral Vocabulary
Cross-out (the one that doesn't belong)
Pairing

Verbal Battery (Levels 2-5)

Word knowledge
Sentence Completion
Verbal Classification
Verbal Analogies
Arithmetic Reasoning

Non-Verbal Battery (Levels 2-5)

Figure Analogies
Figure Classification
Number Series

Levels:
1 - Kindergarten and Grade 1
2 - Grades 2-3
3 - Grades 4-6
4 - Grades 7-9
5 - Grades 10-12

Scores: Scaled; verbal, non-verbal IQ's

Nature of Test:

The tests are based on the premise that most abstract ideas with which the school child or the working adult deals are expressed in verbal symbols, so much so that verbal symbols are the appropriate medium for the testing of abstract intelligence. Nevertheless, they take account of the fact that for some--the young, the poorly educated, or the poor reader--printed words may constitute an inadequate basis for appraising an individual's abilities. Consequently, a parallel set of nonverbal tests is provided to accompany the basic verbal series.

The tests are available in five levels. The first two levels are called the Primary Battery. The items contain pictures of familiar common objects or of simple geometrical figures. For the three higher levels, both a Verbal and Nonverbal Battery are provided.

The Verbal Battery is made up of subtests each of which uses the verbal medium. Of the different subtests, one also involves numerical tasks.

Experience over the years with tasks of these five types has indicated that such tasks provide a good and useful measure of ability to deal with abstractions presented in verbal form and that, since this type of ability is related to academic achievement, they provide a good index of scholastic aptitude.

The Nonverbal Battery is entirely pictorial, diagrammatic, numerical. The subtests are Figure Analogies, Figure Classification and Number Series. For the average child, these tests will not predict school performance quite so well as scores based upon the Verbal Battery. However, they permit an appraisal of abstract intelligence which is not influenced by specific disability in reading. Use of both the Verbal and Nonverbal Batteries is recommended for the appraisal of children in schools, because the discrepancies between performance on the two tests may reveal significant facts about reading achievement, school progress, or vocational prospects.

Means and Standard Deviations:

Test Level	Grade	Verbal Raw Score Mean	S.D.
1	kg		
1	1		
2	2		
2	3		
3	4	46.57	14.65
3	5	58.15	13.92
3	6	63.80	13.16
4	7	45.30	13.34
4	8	51.37	13.33
4	9	56.71	12.91
5	10	43.67	11.46
5	11	49.30	12.79
5	12	51.68	12.22

Mean = 100
Standard Deviation = 16

Reliability:

Battery & Level	Grade Level	Reliability
Primary		
Level 1	K	.916
Level 1	1	.810
Level 2	2	.761
Level 2		
Nonverbal	3	.85
Verbal	3	.92
Level 3		
Nonverbal	4	.80
Verbal	4	.92
Level 3		
Nonverbal	5	.814
Verbal	5	.896
Level 3	6	----
Level 4	7	----
Level 4		
Nonverbal	8	.776
Verbal	8	.865

Lorge-Thorndike Intelligence Test (continued)

Reliability:

Battery & Level	Grade Level	Reliability
Level 4	9	----
Level 5	10	----
Level 5		
Nonverbal	11	.846
Verbal	11	.858
Level 5	12	----

Validity:	Content & Construct	Concurrent & Predictive
Verbal	Good	Good
Nonverbal	Very Good	Good

Critiques:

See Also:

Anderson, W.F. "Relation of Lorge-Thorndike Intelligence Test Scores of Public School Pupils to the Socio-Economic Status of Their Parents." The Journal of Experimental Education, 1962, 31(1), 73-75.

Churchill, W.D. and Smith, S.E. "The Relationship of the 1960 Revised Stanford-Binet Intelligence Scale to Intelligence and Achievement Test Scores Over a Three-Year Period." Educational and Psychological Measurement, 1966, 26(4), 1015-1020.

Knief, L.M. and Stroud, J.B. "Intercorrelations Among Various Intelligence Achievement and Social Class Scores." Journal of Educational Psychology, 1959, 50(3), 117-120.

Rainey, R.G. "A Study of Four School Ability Tests." The Journal of Experimental Education, 1965, 33(4), 305-319.

Nelson Silent Reading Test (2 Forms)

Purpose: To provide a means of comparing a pupil's level of reading achievement with his learning capacity.

Type: Group reading

Range: Grades 3-9

Time for Administration: 30 minutes

Scores: Total raw reading score

Nature of Test:

This test is designed to serve as a measure of the reading ability of pupils in grades III to IX inclusive, and to serve as a diagnostic instrument for determining pupil difficulties. It consists of a vocabulary test and a paragraph test. The Vocabulary Test consists of one hundred words in five-response type, while the Paragraph Test consists of twenty-five paragraphs, each followed by three questions concerning the content of the paragraph, the question being in the four-response form.

The Paragraph Test measures three phases of reading ability, as follows:

1. Ability to understand the general significance of a paragraph.
2. Ability to note details.
3. Ability to predict the probable outcome.

The teacher thus is provided with an indication of the individual pupil's weaknesses and strengths in reading. The highest possible score on the Vocabulary Test is 100 and on each part of the Paragraph Test 25. Thus the maximum score that can be made is 175. The time limits are such that most of the pupils will do about as many exercises as they are able to do. The "power" of the pupil is thus the chief factor measured, although speed of reading is not a wholly negligible factor in the pupil's performance.

Grade	Mean	Standard Deviation	Reliability
3	23	16	.90
4	41	18	.92
5	59	21	.91
6	74	22	.89
7	83	20	.91
8	95	18	.89
9	106	18	.88

Validity: Content and Construct: Very Good
Concurrent and Predictive: Fair

Otis-Lennon Mental Ability Test (2 Forms)

Purpose: To provide comprehensive, carefully articulated assessment of general mental ability, or scholastic aptitude of pupils in American schools.

Type of Test: Group intelligence

Range: Grades K-12

Time for Administration: 20-40 minutes

Cost: $5.50-$6.80 per 35 tests

Subtests: None

Levels:
Primary I--last half of kindergarten
Primary II--first half of first grade
Elementary I--grades 1.5-3.9
Elementary II--grades 4-6
Intermediate--grades 7-9
Advanced--grades 10-12

Scores:
Single deviation IQ
Mean = 100 Standard Deviation = 15

Nature of Test:

Emphasis is placed upon measuring the pupil's facility in reasoning and in dealing abstractly with verbal, symbolic, and figural content sampling a broad range of cognitive abilities. The new Otis-Lennon tests, like the previous editions in the Otis series, were constructed to yield dependable measurements of the "g" or general intellective ability factor. Thus, the single total score obtained at a given level summarizes the pupil's performance on a wide variety of test materials selected for their contribution to the assessment of this general ability factor.

Primary I Level: Test items of the pictorial type sample the mental processes of classification (education of relations), following of directions, quantitative reasoning, and comprehension of verbal concepts. The total score summarizes performance on the 55 items comprising the test. Each item in the test is presented orally by the examiner. This control ensures greater uniformity of test administration with children of this age and developmental level. No reading is required.

Primary II Level: Content of this level is identical to that contained in the Primary I Level.

Elementary I Level: Test items of the pictorial type sample the mental processes of classification (education of relations), following of directions, quantitative reasoning, comprehension of verbal concepts, and reasoning by analogy. The total score summarizes performance on the 80 items comprising the test. No reading is required.

Elementary II Level, Intermediate Level, and Advanced Level: The designated grade ranges for these levels should be used only as a general guide in the selection of a given level for use with a specific group of pupils. This flexibility in the use of the Otis-Lennon tests ensures more efficient measurement within groups of pupils displaying different developmental characteristics.

The test at each of these three levels is comprised of 80 items arranged in spiral omnibus form. A single total score summarizes performance on the particular test. Various types of verbal and nonverbal items sample a wide variety of mental processes. Emphasis is placed upon the measurement of abstract reasoning ability.

Otis-Lennon Mental Ability Test

Level	Grade	Mean (Raw Score)
Primary I	K	
Primary II	1	35.11
Elementary I	2	37.41
Elmentary I	3	45.75
Elementary II	4	34.05
Elementary II	5	43.72
Elementary II	6	52.21
Intermediate	7	37.46
Intermediate	8	43.70
Intermediate	9	49.22
Advanced	10	40.01
Advanced	11	43.55
Advanced	12	47.43

Otis-Lennon Mental Ability Test

			Validity	
Level	Grade	Reliability Split-Half	Content & Construct	Concurrent & Predictive
Primary I	K	.80-.90	Good	Poor
Primary II	1	.90	Good	Excellent
Elementary I	2	.89		
Elementary II	3	.92	Very Good	Excellent
Elementary II	4	.94		
Elementary II	5	.95	Very Good	Excellent
Elementary II	6	.95	Very Good	Excellent
Intermediate	7	.95		
Intermediate	8	.95		
Intermediate	9	.95		
Advanced	10	.95		
Advanced	11	.95		
Advanced	12	.96		

Otis-Lennon Mental Ability Test (Critiques)

See Also:

Grotelveschen, A. "Otis-Lennon Mental Ability Test." *Journal of Educational Measurement*, 1969, 6(2), 111-113.

Smith, A.E. "Otis-Lennon Mental Ability Test." *Journal of Counseling Psychology*, 1970, 17(1), 91-92.

Otis Quick Scoring Mental Ability Test (2 Forms)

Purpose: To measure mental ability--thinking power or the degree of maturity of the mind.

Type of Test: Group intelligence

Range: Grades 1.5-16

Time for Administration: 30-35 minutes

Cost: $2.30-3.20 per 25 tests

Subtests: None

Levels: Alpha Test--Grades 1.5-4
Beta Test--Grades 4-9
Gamma Test--High Schools & Colleges

Scores: Single Overall IQ

Standardized Mean = 100 Standard Deviation = 15

Nature of Test:

The Alpha Short Form is composed of 45 sets of four pictorial forms representing objects or designs. Each set of four pictures is treated as a nonverbal item, in which the pupil marks the picture which does not belong logically in the group, because it differs in kind.

The Beta and Gamma tests each yield a single score which summarizes the 80 items, including word meaning, verbal analogies, scrambled sentences, interpretation of proverbs, logical reasoning, number series, arithmetic reasoning, and design analogies. More than two thirds of the 80 items of the Beta Test measure some form of verbal competence. There is considerable evidence in the literature on group intelligence tests indicating that a single score reflecting a considerable emphasis on the use of verbal symbols will predict school success as well as a more complex pattern of scores.

School personnel should be especially cautious of applying the test findings to children with learning problems or to those who need remedial help in reading and in the language arts.

Otis Quick-Scoring Mental Ability Test

		Reliability		Validity	
	Test Retest	Internal Consistency	Alternate Form	Content & Construct	Concurrent & Predictive
Alpha Beta Gamma	.70	.80-.90	.70-.80	Good	Poor

Otis Quick-Scoring Mental Ability Tests (Critiques)

See Also:

Lefever, D.W. "Critique of Otis Quick-Scoring Mental Ability Tests." In O.K. Buros (ed.) The Sixth Mental Measurements Yearbook; Highland Park, New Jersey: The Gryphon Press, 1965, 362.

Nelson, C.M. and Hudson, F.G. "Predicting the Reading Achievement of Junior High School EMR Children." American Journal of Mental Deficiency, 1969, 74(3), 415-420.

Yates, A. "Critique of Otis Quick-Scoring Mental Ability Tests." In O.K. Buros (ed.) The Sixth Mental Measurements Yearbook; Highland Park, New Jersey: The Gryphon Press, 1965, 362.

Peabody Picture Vocabulary Test

(2 Forms)

Purpose: To provide an estimate of a subject's verbal intelligence through measuring his hearing vocabulary

Type of Test: Individual intelligence

Range: 2.5-18.5 years

Time for Administration: Untimed (usually 10-15 minutes)

Cost: $3.00 per 50 copies

Subtests: None

Scores: Total IQ

Standardized Mean = 100 Standard Deviation = 15

Nature of Test:

The test consists of 150 items, each of which consists of four pictures. The subject is asked to indicate which picture the examiner asks him to find. Besides being effective with average subjects, it has special value with certain other groups. Since no reading is required, it is especially fair for non-readers, and remedial cases. Because the answers may be indicated either orally or physically, it is advantageous for various handicapped persons. The illustrations are bold, clean line drawings without fine detail and figure-ground problems, thus making it more appropriate for visually-impaired and perceptually-handicapped individuals.

Peabody Picture Vocabulary Test

Age Levels	Reliability Coefficients For Raw Scores	Standard Errors For I.Q. Scores
18-0	0.84	6.00
17-0	0.84	6.00
16-0	0.80	6.70
15-0	0.83	6.18
14-0	0.81	6.54
13-0	0.70	8.22
12-0	0.78	7.04
11-0	0.81	6.54
10-0	0.77	7.20
9-0	0.74	7.65
8-0	0.79	6.87
7-0	0.74	7.65
6-0	0.67	8.61
5-0	0.73	7.80
4-6	0.72	7.94
4-0	0.77	7.20
3-6	0.81	6.54
3-0	0.75	7.50
2-6	0.76	7.35

Validity: Congruent - .71 (Stanford-Binet)
Congruent - .61 (Wechsler Scales)
Concurrent - .50+
Predictive - .38

Peabody Picture Vocabulary Test (Critiques)

Gage, G.E. and Naumann, T.F. "Correlation of the Peabody Picture Vocabulary Test and the Wechsler Intelligence Scale for Children." The Journal of Educational Research, 1965, 58(10), 466-468.

Mueller, M.W. "Validity of Six Tests of Ability with Educable Mental Retardates." Journal of School Psychology, 1968, 6(2), 136-146.

Nelson, C.M. and Hudson, F.G. "Predicting the Reading Achievement of Junior High School EMR Children." American Journal of Mental Deficiency, 1969, 74(3), 415-420.

Pool, D.A. and Brown, R. "The Peabody Picture Vocabulary Test as a Measure of General Adult Intelligence." Journal of Consulting and Clinical Psychology, 1970, 34(1), 8-11.

Stanford Achievement Tests (3 Forms)

Purpose: To test the educational achievements that are commonly expected of students in a modern comprehensive school

Type of Test: Individual or group achievement

Range: Grades 1-12

Time for Administration: Varies from 127-440 minutes (4-7 sessions)

Cost: $5.65-$9.75 per 35 tests, $.60-$1.60 per set of keys

Subtests: Primary I Battery (Grades 1.5-2.5)

Word Reading (Word Meaning)
Paragraph Meaning
Vocabulary
Spelling
Word Study Skills
Arithmetic (Concepts)

Primary II Battery (Grades 2.5-3.9)

Word Meaning
Paragraph Meaning
Science & Social Studies Concepts
Arithmetic Concepts
Spelling
Word Study Skills
Language
Arithmetic Computation

Intermediate I Battery (Grades 4.0-5.5)

Word Meaning
Paragraph Meaning
Spelling
Word Study Skills
Language
Social Studies
Arithmetic Computation
Arithmetic Concepts
Arithmetic Applications
Science

Intermediate II Battery (Grades 5.5-6.9)

Word Meaning
Paragraph Meaning
Spelling
Language
Science
Arithmetic Computation
Arithmetic Concepts
Arithmetic Applications
Social Studies

Advanced Battery (Grades 7.0-9.9)

Paragraph Meaning
Spelling
Language
Arithmetic Computation
Arithmetic Concepts
Arithmetic Applications
Social Studies
Science

High School Battery (Grades 9-12)

Reading
Spelling
English
Numerical Competence
Science
Mathematics
Social Studies
Arts & Humanities
Business & Economics
Technical Comprehension

Scores: Raw; for each subtest

Stanford Achievement Tests

Subtest:	Word Reading	Grade 1	Means 16.1	S.D. 6.88
	Paragraph Meaning	Grade 1	Means 14.1	S.D. 7.05
	Vocabulary	Grade 1	Means 18.8	S.D. 6.69
	Spelling	Grade 1	Means 7.7	S.D. 6.05
	Word Study Skills	Grade 1	Means 31.7	S.D. 9.47
	Arithmetic	Grade 1	Means 30.4	S.D. 14.43
Subtest:	Word Meaning	Grade 2	Means 16.0	S.D. 6.3
	Paragraph Meaning	Grade 2	Means 28.1	S.D. 12.35
	Sci. & Social Studies Concepts	Grade 2	Means 17.6	S.D. 4.97
	Spelling	Grade 2	Means 10.9	S.D. 7.24
	Word Study Skills	Grade 2	Means 34.5	S.D. 12.90
	Language	Grade 2	Means 35.3	S.D. 9.72
	Arith. Computation	Grade 2	Means 18.4	S.D. 8.38
	Arith. Concepts	Grade 2	Means 17.2	S.D. 7.42
Subtest:	Word Meaning	Grade 3	Means 23.5	S.D. 6.68
	Paragraph Meaning	Grade 3	Means 40.1	S.D. 11.33
	Sci. & Social Studies Concepts	Grade 3	Means 22.1	S.D. 5.70
	Spelling	Grade 3	Means 18.4	S.D. 7.73
	Word Study Skills	Grade 3	Means 42.1	S.D. 13.23
	Language	Grade 3	Means 46.4	S.D. 11.40
	Arith. Computation	Grade 3	Means 32.4	S.D. 9.30
	Arith. Concepts	Grade 3	Means 26.6	S.D. 9.58
Subtest:	Word Meaning	Grade 4	Means 19.0	S.D. 7.94
	Paragraph Meaning	Grade 4	Means 30.6	S.D. 11.22
	Spelling	Grade 4	Means 28.6	S.D. 11.37
	Word Study Skills	Grade 4	Means 37.9	S.D. 12.92
	Language	Grade 4	Means 73.6	S.D. 17.15
	Arith. Computation	Grade 4	Means 19.2	S.D. 7.07
	Arith. Concepts	Grade 4	Means 15.4	S.D. 6.86
	Arith. Applications	Grade 4	Means 16.0	S.D. 6.46
	Social Studies	Grade 4	Means 25.8	S.D. 8.28
	Science	Grade 4	Means 31.1	S.D. 11.16
Subtest:	Word Meaning	Grade 5	Means 22.3	S.D. 8.76
	Paragraph Meaning	Grade 5	Means 31.7	S.D. 11.96
	Spelling	Grade 5	Means 26.8	S.D. 10.14
	Language	Grade 5	Means 81.2	S.D. 18.72
	Arith. Computation	Grade 5	Means 14.8	S.D. 5.18
	Arith. Concepts	Grade 5	Means 12.1	S.D. 5.15
	Arith. Applications	Grade 5	Means 16.6	S.D. 6.05
	Social Studies	Grade 5	Means 37.3	S.D. 11.79
	Science	Grade 5	Means 30.0	S.D. 9.53

(Continued)

Stanford Achievement Tests

Subtest:	Word Meaning	Grade 6	Means 27.6	S.D. 9.25
	Paragraph Meaning	Grade 6	Means 38.4	S.D. 11.94
	Spelling	Grade 6	Means 33.1	S.D. 11.26
	Language	Grade 6	Means 90.5	S.D. 18.88
	Arith. Computation	Grade 6	Means 21.7	S.D. 7.21
	Arith. Concepts	Grade 6	Means 16.8	S.D. 6.80
	Arith. Applications	Grade 6	Means 21.5	S.D. 7.83
	Social Studies	Grade 6	Means 44.6	S.D. 12.41
	Science	Grade 6	Means 35.0	S.D. 9.69
Subtest:	Paragraph Meaning	Grade 7	Means 31.0	S.D. 11.86
	Spelling	Grade 7	Means 26.4	S.D. 10.88
	Language	Grade 7	Means 92.5	S.D. 17.71
	Arith. Computation	Grade 7	Means 19.2	S.D. 7.28
	Arith. Concepts	Grade 7	Means 16.5	S.D. 6.47
	Arith. Applications	Grade 7	Means 13.7	S.D. 5.14
	Social Studies	Grade 7	Means 44.9	S.D. 13.15
	Science	Grade 7	Means 32.2	S.D. 9.82
Subtest:	Paragraph Meaning	Grade 8	Means 35.6	S.D. 11.95
	Spelling	Grade 8	Means 31.0	S.D. 12.23
	Language	Grade 8	Means 98.0	S.D. 17.70
	Arith. Computation	Grade 8	Means 23.5	S.D. 8.35
	Arith. Concepts	Grade 8	Means 20.4	S.D. 7.58
	Arith. Applications	Grade 8	Means 16.4	S.D. 5.76
	Social Studies	Grade 8	Means 50.3	S.D. 13.52
	Science	Grade 8	Means 35.6	S.D. 10.09
Subtest:	Paragraph Meaning	Grade 9	Means 38.0	S.D. 12.25
	Spelling	Grade 9	Means 32.9	S.D. 12.50
	Language	Grade 9	Means 101.5	S.D. 13.12
	Arith. Computation	Grade 9	Means 25.8	S.D. 8.84
	Arith. Concepts	Grade 9	Means 22.7	S.D. 8.21
	Arith. Applications	Grade 9	Means 17.5	S.D. 5.68
	Social Studies	Grade 9	Means 52.6	S.D. 13.60
	Science	Grade 9	Means 38.0	S.D. 9.98

Stanford Achievement Tests

Primary I Grade I	r_{11}
Word Reading	.85
Paragh. Meaning	.90
Vocabulary	.79
Spelling	.92
Word Study Skills	.88
Arithmetic	.95

Primary II Grade 2	r_{11}
Word Meaning	.85
Paragh. Meaning	.93
Sci. Soc. Studies Concepts	.66
Spelling	.94
Word Study Skills	.92
Language	.84
Arith. Comput.	.93
Arith. Concepts	.86

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Stanford Achievement Tests

Primary II Grade 3	r_{11}
Word Meaning	.87
Paragraph Meaning	.93
Sci. Soc. Studies Concepts	.79
Spelling	.94
Word Study Skills	.94
Language	.89
Arith. Comput.	.93
Arith. Concepts	.90

Intermediate I Grade 4	r_{11}
Word Meaning	.90
Paragraph Meaning	.92
Spelling	.93
Word Study Skills	.94
Language	.93
Arith. Comput.	.89
Arith. Concepts	.86
Arith. Applications	.86
Social Studies	.86
Science	.91

Intermediate II Grade 5	r_{11}
Word Meaning	.89
Paragraph Meaning	.93
Spelling	.91
Language	.93
Arith. Comput.	.83
Arith. Concepts	.77
Arith. Applications	.84
Social Studies	.89
Science	.88

Intermediate II Grade 6	r_{11}
Word Meaning	.90
Paragraph Meaning	.93
Spelling	.93
Language	.95
Arith. Comput.	.89
Arith. Concepts	.85
Arith. Applications	.89
Social Studies	.91
Science	.90

Advanced Grade 7	r_{11}
Paragraph Meaning	.93
Spelling	.91
Language	.94
Arith. Comput.	.87
Arith. Concepts	.82
Arith. Applications	.77
Social Studies	.89
Science	.88

Advanced Grade 8	r_{11}
Paragraph Meaning	.93
Spelling	.92
Language	.94
Arith. Comput.	.90
Arith. Concepts	.86
Arith. Applications	.81
Social Studies	.91
Science	.89

Advanced Grade 9	r_{11}
Paragraph Meaning	.94
Spelling	.94
Language	.94
Arith. Comput.	.92
Arith. Concepts	.87
Arith. Applications	.79
Social Studies	.90
Science	.90

Grade 9 (Reliability Coefficients)	r_{11}
English	.94
Numerical Competence	.90
Math - Part A	.84
Math - Total	.84
Reading	.90
Science - Part A	.87
Science - Total	.87
Social Studies	.85
Spelling	.89
Arts & Humanities	.91
Business & Economics	.88
Tech. Comprehension	.92

(Continued)

Stanford Achievement Tests (Reliability Coefficients)

Grade 10	r_a
English	.94
Numerical Competence	.90
Math - Part A	.89
Math - Total	.89
Reading	.91
Science - Part A	.88
Science - Total	.89
Social Studies	.85
Spelling	.90
Arts & Humanities	.92
Business & Economics	.88
Tech. Comprehension	.93

Grade 11	r_a
English	.94
Numerical Competence	.92
Math - Part A	.92
Math - Total	.93
Reading	.92
Science - Part A	.87
Science - Total	.89
Social Studies	.88
Spelling	.91
Arts & Humanities	.93
Business & Economics	.90
Tech. Comprehension	.94

Grade 12	r_a
English	.94
Numerical Competence	.92
Math - Part A	.92
Math - Total	.94
Reading	.91
Science - Part A	.87
Science - Total	.89
Social Studies	.88
Spelling	.92
Arts & Humanities	.93
Business & Economics	.90
Tech. Comprehension	.94

Stanford Achievement Tests

	Validity	
	Content & Construct	Concurrent & Predictive
Arith. Applications	Good	Good
Arith. Computation	Very Good	Good
Arith. Concepts	Very Good	Fair
Arith. Total	Good	Fair
Language	Very Good	Fair
Paragraph Meaning	Very Good	Fair
Vocabulary	Very Good	Poor
Word Meaning	Very Good	Fair
Science	Good	Good
Science & Social Studies		Good
Concepts		Poor
Social Studies	Good	Good
Spelling	Very Good	Fair
Word Study Skills	Very Good	Fair

Stanford Achievement Tests (Critiques)

See Also:

Olson, A.V. and Johnson, C.I. "Structure and Predictive Validity of the Frostig Developmental Test of Visual Perception in Grades One and Three." The Journal of Special Education, 1970, 4(1), 49-52.

Stake, R.E. and Hastings, J.T. "The Stanford Achievement Test Battery." Personnel and Guidance Journal, 1964, 43(10), 178-184.

Stanford-Binet Intelligence Scale (1 Form)

Purpose: To test mental ability

Type of Test: Individual intelligence

Range: Two years-Adult

Time for Administration: 60-90 minutes

Cost: $33.20 per set of test materials, $4.40 per 35 record booklets, $4.48 per manual

Subtests: None

Scores: Total IQ, scaled

Nature of Test:

This test differs according to age level. Many of the tests at the lower age levels are quite concrete, dealing with little objects and pictures. At the upper levels, the tests tend to be more abstract and quite heavily verbal. The various tests include tasks calling for display of past learnings, perception of relations, judgment, interpretation, sustained attention, immediate memory, and other cognitive processes.

In testing a child, the examiner begins at a level where the child is likely to succeed, but only with some effort. If the child fails these and appears discouraged, the examiner will drop back to an easier level. Otherwise, he will move ahead, level-by-level, until he reaches a level at which the child fails all tests. When the upper limit has been established, the examiner will go back and establish the level at which the child can do all the tasks.

Stanford-Binet Intelligence Scale (Standardization Sample Scores)

Age	Means	Standard Deviation
All	101.8	16.4

Reliability: .91
Validity: .82-.90

Stanford-Binet Intelligence Tests (Critiques)

See Also:

Churchhill, W.D. and Smith, S.E. "The Relationship of the 1960 Revised Stanford Binet Intelligence Scale to Intelligence and Achievement Test Scores Over a Three-Year Period." Educational and Psychological Measurement, 1966, 26(4), 1015-1020.

Deloria, D. The Stanford-Binet in the Ypsilanti Curriculum. Why?

Himelstein, P. "Research with the Stanford-Binet, Form L-M: The First Five Years." Psychological Bulletin, 1966, 65(3), 156-164.

Hirshoren, A. "A Comparison of the Predictive Validity of the Revised Stanford-Binet Intelligence Scale and the Illinois Test of Psycholinguistic Abilities," 1969, 35(3), 517-521.

Mueller, M.W. "Validity of Six Tests of Ability with Educable Mental Retardates." Journal of School Psychology, 1968, 6(2), 136-146.

Nelson, C.M. and Hudson, F.G. "Predicting the Reading Achievement of Junior High School EMR Children." American Journal of Mental Deficiency, 1969, 74(3), 415-420.

Scherer, I.W. "The Prediction of Academic Achievement in Brain-Injured Children." Exceptional Children, 1961, 103-107.

Wide Range Achievement Tests

(1 Form)

Purpose: To assess scholastic achievement

Type of Test: Individual achievement

Range: Kindergarten-college

Time for Administration: 20-45 minutes

Cost: $3.60 per 50 tests

Levels: I-ages 5-11, II-ages 12-24

Subtests: Reading, spelling, arithmetic

Scores: One for each subtest

Nature of Test:

The WRAT was designed to serve as a convenient tool for the study of the basic school subjects and as an adjunct to tests of intelligence and behavior adjustment. The WRAT consists of the following three subtests, at both levels:

1. Reading: recognizing and naming letters and pronouncing words.
2. Spelling: copying marks resembling letters, writing the name, and writing single words to dictation.
3. Arithmetic: counting, reading number symbols, solving oral problems, and performing written computations.

Means & Standard Deviations of Raw Scores of the Reading Test for Ages 5 to Adult--Both Levels

Age	Mean	Standard Deviation	Age	Mean	Standard Deviation
5	16.96	7.70	11	38.15	11.09
5 1/2	19.37	7.75	11 1/2	40.15	11.53
6	24.08	10.43	12	43.92	11.78
6 1/2	32.25	10.72	12 1/2	45.64	11.81
7	39.85	12.30	13	46.40	11.75
7 1/2	46.83	12.40	13 1/2	48.73	11.92
8	51.48	12.68	14	51.14	11.87
8 1/2	54.17	13.04	14 1/2	52.29	12.06
9	57.40	13.07	15	54.31	12.13
9 1/2	61.16	13.37	15 1/2	54.93	12.20
10	63.18	13.44	16	55.76	12.72
10 1/2	66.60	13.39	17	57.29	12.76
11	68.48	13.35	18-19	58.74	13.79
11 1/2	70.35	13.28	20-24	59.84	14.00
12	73.11	13.19	25-34	59.20	13.95
12 1/2	77.49	12.97	35-44	59.19	14.04
			45 Up	58.98	14.13

Means & Standard Deviations of Raw Scores of the Spelling Test for Ages 5 to Adult--Both Levels

Age	Mean	Standard Deviation	Age	Means	Standard Deviation
5	13.87	5.26	11	18.40	7.58
5 1/2	15.35	5.57	11 1/2	19.58	7.71
6	18.70	5.70	12	24.13	8.66
6 1/2	23.50	5.80	12 1/2	25.84	8.78
7	27.03	6.13	13	27.08	8.84
7 1/2	31.15	6.30	13 1/2	29.04	8.95
8	33.56	6.47	14	30.35	8.73
8 1/2	35.28	6.66	14 1/2	31.02	8.82
9	37.56	6.91	15	31.63	8.98
9 1/2	40.07	7.35	15 1/2	32.90	9.39
10	42.15	7.94	16	33.86	9.34
10 1/2	44.05	8.01	17	35.24	9.25
11	45.87	8.00	18-19	36.06	10.09
11 1/2	46.72	8.00	20-24	36.94	10.15
12	48.69	7.97	25-34	35.63	10.60
12 1/2	50.81	7.76	35-44	34.86	10.89
			45 Up	33.51	10.26

Means & Standard Deviations of Raw Scores of the Arithmetic Test for Ages 5 to Adult--Both Levels

Age	Means	Standard Deviation	Age	Means	Standard Deviation
5	12.74	4.41	11	19.72	4.78
5 1/2	13.51	4.49	11 1/2	21.01	4.89
6	17.14	4.70	12	23.71	5.46
6 1/2	19.32	4.74	12 1/2	25.22	5.70
7	22.16	4.62	13	26.31	6.08
7 1/2	24.97	4.68	13 1/2	27.63	6.10
8	27.03	4.51	14	28.30	6.15
8 1/2	28.50	4.42	14 1/2	29.48	6.38
9	29.95	4.43	15	29.50	6.37
9 1/2	31.93	4.80	15 1/2	29.65	6.63
10	33.72	5.77	16	29.85	6.91
10 1/2	37.03	6.27	17	30.60	7.25
11	39.48	6.50	18-19	29.12	7.70
11 1/2	41.72	6.58	20-24	28.54	8.00
12	44.01	6.94	25-34	25.57	7.95
12 1/2	46.25	6.97	35-44	23.06	7.74
			45 Up	20.90	7.82

Reliability Coefficients (r) of the Raw Scores of the Reading Subtest

Age in Years	Level I r	Age in Years	Level II r
5	.981	12	.986
6	.986	13	.987
7	.993	14	.988
8	.991	15	.986
9	.989	16-17	.985
10	.990	18-19	.983
11	.987	20-Up	.987

Reliability of the Spelling Subtest

Age in Years	Level I r	Age in Years	Level II r
5	.971	12	.979
6	.963	13	.989
7	.977	14	.987
8	.978	15	.982
9	.977	16-17	.984
10	.981	18-19	.984
11	.982	20-Up	.986

Reliability Coefficients (r) of the Raw Scores of the Arithmetic Subtest

Age in Years	Level I r	Age in Years	Level II r
5	.966	12	.940
6	.959	13	.957
7	.962	14	.956
8	.948	15	.966
9	.942	16-17	.955
10	.948	18-19	.969
11	.945	20-Up	.970

Wide Range Achievement Tests

Validity:	Content & Construct	Concurrent & Predictive
Arithmetic	*Good	Good
Reading	Good	Good
Spelling	Good	Good

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*Kindergarten - Very Good

Wide Range Achievement (Critiques)

See Also:

Fortenberry, W.D. and Broome, B.J. "Comparison of the Gates Reading Survey and the Reading Section of the Wide-Range Achievement Test." Journal of Developmental Reading, 1963, 7(3), 66-68.

Hopkins, K.D., Dobson, J.C. and Oldridge, O.A. "The Concurrent and Congruent Validities of the Wide-Range Achievement Test." Educational and Psychological Measurement, 1962, 22(4), 791-793.

Mueller, M.W. "Validity of Six Tests of Ability with Educable Mental Retardates." Journal of School Psychology, 1968, 6(2), 136-146.

Anderson, W.F. "Relation of Lorge-Thorndike Intelligence Test Scores of Public School Pupils to the Socio-Economic Status of Their Parents." The Journal of Experimental Education, 1962, 31(1).

The purpose of this paper was to investigate the relationship between the intelligence of fifth and seventh grade students and the social class of their parents. Intelligence was measured by the Lorge-Thorndike Intelligence Test, a test of abstract intelligence. This is a concept which its authors define as the ability to work with ideas and the relationships among ideas. Both verbal and non-verbal tests are included. Social class was ascertained using the Sim's hierarchy of social prestige associated with occupations. Three socio-economic levels were delineated: Group I, upper middle and upper social classes; Group II, middle-working and middle social classes; and Group III, lower working and working classes.

The results of the testing indicated that the Lorge-Thorndike scores were highly related to the social class of the student's family. Higher social class was associated with higher mean IQ's on both verbal and non-verbal factors of the test. Since the mean verbal IQ for the students in Group III was significantly higher than the mean non-verbal IQ, there was no evidence that lower class pupils were more effective on non-verbal items than on verbal.

Brim, O.B. "American Attitudes Toward Intelligence Tests." American Psychologists, 20, 1965, 125-130.

This article is an outgrowth of a project under the Russell Sage Foundation which investigated the social consequences of administering standardized ability tests. The author elaborates the various objections which have been raised about testing. He divides the objections into two categories: superficial or apparent criticisms and basic sources of criticisms. The former criticisms are felt to be ones which could be almost alleviated with the proper controls and education. The latter kind of criticisms are harder to alleviate since these deal with more basic issues such as long-range self-esteem, and the issue of equality of all men. He concludes by saying: "Our review of these four fundamental sources of opposition to tests leads to the conclusion that psychologists must be concerned about the society in which tests are used. Testing does not occur in isolation; there is always a social context. Test scores have a social meaning. They have impact on man's self-esteem; they influence his life chances; they engage his deepest political and social attitudes. These forces must be understood as part of the social setting in which intelligence testing is carried on."

Churchill, W.D. and Smith, S.E. "The Relationship of the 1960 Revised Stanford-Binet Intelligence Scale to Intelligence and Achievement Test Scores Over a Three-Year Period." Educational and Psychological Measurement, 1966, 26(4), 1015-1020.

The primary objective of this study was to determine the relationship between the 1960 Stanford-Binet Intelligence Scale (S-B) and Lorge-Thorndike IQ's obtained three years later. A secondary objective was to determine the relationship between the 1960 S-B and achievement as measured by the Iowa Test of Basic Skills.

The subjects for the study were 56 members of a seventh grade class in a rural central school. These students had taken the 1960 S-B and the Iowa Test of Basic Skills (Form 2) in third grade, and the Lorge-Thorndike Intelligence Tests and Iowa Tests of Basic Skills (Form 1) in grade 6.

The authors concluded that:

1. The 1960 S-B is a valid measure of "scholastic ability;
2. Group mental tests and comprehensive achievement tests lead to the same prediction;
3. For this small sample, at least, the two IQ tests used could be considered interchangeable.

Deloria, Dennis. "The Stanford-Binet in the Ypsilanti Curriculum. Why?" High Scope Educational Research Foundation.

The author evaluates the Stanford-Binet Intelligence Scale as he defends its use as the key instrument used to assess the affects of the Ypsilanti Cognitively-Oriented Follow Through Curriculum.

The following points are made:

1. The Stanford-Binet (S-B) exhibits high predictive validity for later success in school;
2. The S-B excells in reliability;
3. The S-B measures present ability, not inborn capacity;
4. Though the S-B was normed using middle class white persons, it does predict success in American schools as they currently exist better than any comparable test.
5. The cultural bias of the S-B can be diminished by considering change scores rather than absolute scores;
6. An intelligence test is really only a special kind of achievement test;
7. The variability of S-B scores remains essentially constant as children progress in age.

Eagle, N. and Harris, A.S. "Interaction of Race and Test on Reading Performance Scores." Journal of Educational Measurement, 1966, 6(3), 131-135.

This study examines the relationship between race and performance on two nationally standardized reading tests. The appropriate reading tests of the Iowa Tests of Basic Skills and Metropolitan Achievement Battery were administered to all fourth and sixth grade students in all elementary schools of an urban school district near New York City. Although white pupils earned higher scores than non-white pupils on both tests, the Metropolitan produced significantly greater differences between the races than the Iowa, at both grade levels. White upper elementary children were "favored" by the Metropolitan and Negro children were "favored" by the Iowa.

The authors feel that this finding is of importance since, if an interaction exists between social class or ethnic group and reading test, knowledgeable administrators could use combinations of tests to demonstrate either (a) maximum school reading performance for public relations purposes, or (b) minimal school reading performance, possibly to qualify for more Federal or state compensatory program aid.

Feldman, S. and Weiner, M. "The Use of a Standardized Reading Achievement Test with Two Levels of Socio-Economic Status Pupils." The Journal of Experimental Education, 1964, 32(3), 269-274.

The authors are concerned that, while most tests are standardized for normally distributed populations, the populations most often actually tested are homogeneous. Lower and middle socio-economic level fifth grade students were tested with the Gates Advanced Primary Reading Test and the Gates Basic Reading Test, Level of Comprehension subtest.

The purpose of this study was an analysis of these two tests in an effort to determine comparability and the effect of socio-economic level on test scores. After meeting several difficulties in attempting to use such heterogeneously standardized tests for evaluating the homogeneous groups of subjects, the authors made the following recommendations concerning the use of standardized tests in assessing the reading skills of students in different socio-economic levels:

1. Even though test publishers state that grade scores are comparable in adjacent tests in a battery of reading achievement tests, two points must be considered: (a) the highest and lowest possible grade scores for each test; and (b) whether both tests may be measuring different reading skills. When two different ability groups are given the test, then factors a and b above become even more crucial.

2. Tests should be tried out with a small pilot-group before any large-scale test administration is undertaken.

3. If the purpose of the test user is to distinguish among the pupils' skills measured by the test, then the use of a standardized test with a homogeneous group will very likely not provide the desired results.

Fortenberry, W.D. and Broome, B.J. "Comparison of the Gates Reading Survey and the Reading Section of the Wide-Range Achievement Test." *Journal of Developmental Reading*, 1963, 7(3), 66-68.

This study looked at the relationship between the group test, the Gates Reading Survey and the individual test, the Wide-Range Achievement Test. The researchers were interested in discovering whether the group test could predict the individual test, thus allowing them to use the group test as a basis for diagnosis rather than having to administer the Wide-Range Achievement Test. High correlations were obtained between the two tests when administered to 98 fourth grade pupils enrolled in elementary schools in Lousiana. The students had IQ's ranging from 83 to 126 with a mean of 103. They came from lower to upper class families. The correlations between GRS section on Speed of reading and the WRA Reading Section was .68; the correlation between the spelling section of the GRS and the WRA reading section was .80; and the correlation between the GRS comprehension section and the WRA reading section was .67. It was concluded that the GRS could be used as a basis for predicting the WRA.

Gage, G.E. and Naumann, T.F. "Correlation of the Peabody Picture Vocabulary Test and the Wechsler Intelligence Scale for Children." The Journal of Educational Research, 1965, 58(10), 466-468.

The purpose of this study was to determine if the Peabody Picture Vocabulary Test (PPVT) could be used as a reliable and valid measure of intelligence when the subjects were handicapped in sufficient extent or nature to warrant their referral for psychological evaluation.

The data for this study were collected from the records of 30 consecutive referrals to the psychological services department of a public school system. Average age for the total group was 106 months.

Product-moment coefficients of correlation were computed between the IQ's obtained by Form A of the PPVT and the Wechsler Intelligence Scale for Children (WISC) IQ's. Correlations significant at the 1% confidence level were obtained between the PPVT IQ and the Verbal Scale, Performance Scale, and Full Scale IQ's on the WISC.

Thus, the PPVT may be found to be a reliable and valid measure where an assessment of "understanding" vocabulary vs. "speaking" vocabulary is desired.

Grotelveschen, A. "Otis-Lennon Mental Ability Test." Journal of Educational Measurement, 1969, 6(2), 111-113.

The Otis-Lennon Mental Ability Test is a revision of the Otis Quick-Scoring Mental Ability Test. The Otis-Lennon Primary I, Primary II, and Elementary I levels are designed to replace the Quick-Scoring Alpha Test; the Elementary II and Intermediate levels are designed to replace the Beta test; and the Advanced level is designed to replace the Gamma test.

The reviewer finds much to commend in the test. The test booklets are well-organized and designed and the test itself is easily administered and scored. The manual contains an excellent discussion of the use of the age and grade norms and the interpretation of test scores. Substantial evidence is provided to indicate a high reliability for the test.

Some criticisms are offered. The distinctiveness of the Primary I level, intended as a downward extension of the Alpha test, is questioned by the reviewer. Since the items in the Primary I level are identical to those in the Primary II, the response mode is the only source of differentiation, and this the reviewer feels is not an adequate base for distinguishing between them. In addition, the technical data for the Primary I level are neither as complete nor acceptable as those provided for the other test levels. The reviewer also questioned the lack of data on validity.

In general, the reviewer concludes that the Otis-Lennon is an outstanding test of its kind.

Himelstein, P. "Research With the Stanford-Binet, Form L-M: The First Five Years." Psychological Bulletin, 1966, 65(3), 156-164.

This article reviews the first five years of research with the 1960 revision of the Stanford-Binet Intelligence Scale (1960-1965). The major areas considered by the reviewer are validity, reliability, sensitivity to extra-test influences, performance of southern Negro children, influence of socio-economic status, diagnostic value, and brief forms.

A major problem in the studies reviewed was the population used; frequently the sample was drawn from retarded or gifted children. This fact decreased the generalizability of the results.

Almost all of the validity studies were concerned with concurrent validity in which the Stanford-Binet was correlated with another test, often a test that just happened to be in the patient's file. The author reports correlations between the Stanford-Binet and the Wechsler Intelligence Scale for Children, the Wechsler Adult Intelligence Scale, the Draw-A-Man Test, the Peabody Picture Vocabulary Test, the Kuhlman Test of Mental Development, the Vineland Social Maturity Scale, the Gesell Developmental Schedule, the California Test of Mental Maturity, the Sequential Test of Educational Progress, the California Achievement Test, and teacher ratings.

The studies revealed little concern for the reliability of the test, the effects of various incentives, and the influence of situational variables, such as "warm" versus "cold" examiners.

In general, the use of the Stanford-Binet short form was found to slightly underestimate the full-scale score. The Stanford-Binet has not been widely employed as a diagnostic tool.

Hirshoren, A. "A Comparison of the Predictive Validity of the Revised Stanford-Binet Intelligence Scale and the Illinois Test of Psycholinguistic Abilities," Exceptional Children, 1969, 35(3), 517-521.

The Illinois Test of Psycholinguistic Ability (ITPA) was developed as a clinical diagnostic test to be used with young children for the identification of specific language disabilities.

The problem of the present study was to determine the predictive validity of the ITPA Total Language Score and of the subtest scores, as well as the predictive validity of the Revised Stanford-Binet IQ, all obtained at the beginning of kindergarten, for school achievement at the beginning of the second grade. For the study, 40 Caucasion children from a heterogeneous neighborhood were tested with the ITPA, the 1960 revision of the Stanford-Binet, and the California Achievement Test (CAT), Lower Primary Form.

The results indicate that the Total Language Score of the ITPA, at least at the kindergarten level, is as valid a predictor as is the Stanford-Binet IQ for school achievement two years later. Performance on the ITPA subtests at the automatic-sequential level is significantly related to performance on all seven of the achievement variables from the CAT. At the representational level of the ITPA, the various subtests are significantly related to various of the CAT subtests. Using stepwise multiple correlation with the ITPA subtests increases the predictive validity of the ITPA. Including the Stanford-Binet IQ as a predictor variable does not improve upon the predictions of future achievement obtained by using the ITPA subtests alone. The ITPA has the added advantage of noting specific areas of language deficits so that remedial programs for individual children may be developed.

Hopkins, K.D., Dobson, J.C. and Oldridge, O.A. "The Concurrent and Congruent Validities of the Wide-Range Achievement Test." Educational and Psychological Measurement, 1962, 22(4), 791-793.

The WRAT was first published in 1946. The reviews of the test were unfavorable because of its questionable validity and norming procedures, and because of its unsubstantiated claims of clinical symptoms suggested by the authors. Testing authorities have not examined the test since that time although it is the second most used achievement test in Psychological clinics. The reason for this seems to lie in the fact that it is easy to administer and it eliminates almost all of the chance variance.

This study compared the WRAT scores on reading achievement with teacher ratings of children's reading ability and the reading sections on the California Achievement Test. This would show the concurrent validity of the WRAT. It was found that with a sample of 501 pupils in grades 1-5, the WRAT and CAT showed good concurrent validity with correlations of from .851 to .906 with teacher ratings and concurrent validity with the CAT of .739 to .856. The results tend to validate at least one portion of the WRAT.

Johnson, G.B. "Factors to be Considered in the Interpretation of Intelligence-Test Scores." The Elementary School Journal, 1953, 1-8.

"There are three sources of potential error to be considered in the interpretation of an intelligence quotient. These are to be found in external factors, which relate to the test itself; in internal factors, which include organic and emotional aspects of the individual being tested; and in factors which may be both external and internal and which include the effect of the individual's environment in general." From the detailed analysis of these sources of error, the author concludes:

"1. Select the tests which most nearly suit your purpose in testing. To make the selection requires a knowledge of individual, group, verbal and performance tests and their statistical foundations.

2. Select the tests which have been demonstrated to be both valid and reliable in testing situations similar to your own. This requires a knowledge of the individual and group differences in your situation. Even then, do not put too much credence in the results of one test.

3. If you use standard norms, realize their limitations. If you find them inadequate, prepare local norms.

4. Whichever test you choose, follow closely the directions for administering it. Practice on yourself often before actually administering it.

5. If the test is not machine scored, score it yourself twice.

6. Administer the test under optimum physical and psychological conditions.

7. With both individual and group tests, observe the pupils for factors which may be significant to efficiency of performance, hence to score interpretation.

8. Condition the testees for, not against, intelligence tests. An initial approach in this direction should be to provide pre-service and in-service training for teachers.

9. Understand that intelligence is a composite of factors, in some of which one person may be relatively strong and others relatively weak.

10. Realize that, even with all these precautions, the intelligence test is still in an early phase of development and that the intelligence quotient cannot be considered as precise, as consistent or as true a value as in a unit of measure from the thermometer or the weighing scale."

Knief, L.M. and Stroud, J.B. "Intercorrelations Among Various Intelligence, Achievement and Social Class Scores." Journal of Educational Psychology, 1959, 50(3), 117-120.

In order to obtain information on the relationship of social class to intelligence and achievement test scores, a group of fourth grade students in a Midwestern community were tested over a period of several months. The tests administered were (1) Lorge-Thorndike Intelligence Tests, Verbal; (2) Lorge-Thorndike Intelligence Tests, Nonverbal (Level 3 in both cases); (3) Davis-Eells Games (Elementary Level); (4) Raven's Progressive Matrices; (5) Iowa Test of Basic Skills; and (6) the Warner Index of Status Characteristics.

The following intercorrelations were reported:

Variable	1	2	3	4	5	6
1		.309	.304	.323	.179	.340
2			.571	.645	.405	.568
3				.709	.437	.839
4					.521	.683
5						.450
6						

The authors concluded that their study gave little justification for the use of the Davis-Eells games, Lorge-Thorndike Non-Verbal test, and the Progressive Matrices in conjunction with the Lorge-Thorndike Verbal test for general prediction purposes. However, this information does not negate their usefulness in individual diagnosis.

Lefever, D.W. "Critique of Otis Quick-Scoring Mental Ability Test," in O.K. Buros (ed.) The Sixth Mental Measurements Yearbook; Highland Park, New Jersey; The Gryphon Press, 1965, 362.

The reviewer has several criticisms of the new edition of the Otis Quick-Scoring Mental Ability Tests, many of which are concerned with the rather vague and incomplete manner in which the norms were derived. Other than this, he feels that the most serious weaknesses of the revised tests appear to be the lack of percentile norm tables of any description and the failure to furnish normative data on the comparability of the two new forms for each level. The manuals are very brief and the reviewer feels that detailed suggestions for teachers, counselors and supervisors on the application of the tests to instructional and guidance problems would be helpful. More recent evidence concerning the validity of Gamma is to be desired, as well as more extensive recent data for the predictive power of both Beta and Gamma tests.

The reviewer does note, however, that most of his criticisms are directed at the amount of information furnished to the user of the tests rather than against the quality or value of the tests themselves. The Otis Quick-Scoring Mental Ability Tests, as the title implies, do furnish a short and easily scored indicator of scholastic aptitude. Such a measure, if interpreted with care, can be useful to both teacher and counselor by revealing within fairly broad limits of accuracy the probable level of academic achievement for a majority of pupils.

Pool, D.A. and Brown, R. "The Peabody Picture Vocabulary Test as a Measure of General Adult Intelligence." Journal of Consulting and Clinical Psychology, 1970, 34(1), 8-11.

This study was a search for a rapidly administerable test of general intelligence for adults to be used in large hospitals. The PPVT has not been employed extensively with adults but since it was short, the researchers chose to investigate it. The SS were 150 outpatients referred for psychological evaluation of psychiatric problems, mental retardation, brain damage or potential for vocational rehabilitation. Each S was given the PPVT and also the Dappelt short form of the WAIS. An overall correlation of .81 was found between the two tests. The means were found to be approximately the same in the sub-groups of patients. In the low IQ range (0-59, 60-69), the D WAIS scores were considerably higher than the PPVT. In the higher ranges of IQ the PPVT means were considerably higher than the D-WAIS means; for example, the mean D-WAIS score was 20 points lower than the mean PPVT score. It was shown that although the correlations between the two tests are high, the clinical placement of patients was grossly different for the two tests. Sixty-three percent of the PPVT scores differed by one category or more from the D-WAIS category. Two qualifications were made of these results. (1) The study dealt with PPVT scores only as they predicted D-WAIS scores, and the findings obviously did not bear on the validity of the PPVT; (2) The D-WAIS was not the full WAIS so that there may be differences between the two forms even though they correlate .90. Two major implications were made: (a) comparison of overall means and a visual inspection of a scatter plot of two sets of scores may not readily reveal gross departures from linearity. "This is important to the clinician who deals with individuals and he can't afford to think in terms of overall relations, but must think in terms of 'chances' that a particular score will be grossly misleading;" (b) no matter what is told to parents, teachers and other professionals, there is still a strong tendency for clinicians and psychiatrists to think about IQ scores 'as if' they were WAIS or Stanford Binet scores." In that case, using the PPVT in the lower or upper ranges could do a disservice to the patient.

Rainey, R.G. "A Study of Four School-Ability Tests." The Journal of Experimental Education, 1965, 33(4), 305-319.

The purpose of this study was the evaluation of four school-ability tests: the 1963 versions of the Kuhlman-Anderson, the California Short-Form Test of Mental Maturity, the SRA Primary Mental Abilities Test, and the 1957 form of the Lorge-Thorndike Intelligence Tests. In addition, the Iowa tests of Basic Skills (I.T.B.S.) were administered. The subjects were 2nd, 4th and 7th grade pupils and were designated as belonging to either high, middle or low socio-economic status.

The authors then summarized their results in a series of statements about each test.

The Lorge-Thorndike Test was found to be easy to administer at all levels, from both the students' and testers' viewpoint. The stability of the mean and standard deviation was good at all grade levels in the middle SES area, but poor in the high and low areas. The verbal sections of the test correlated highly with the reading, vocabulary and other language related Iowa Tests; correlations with arithmetic were good, but other tests had better results. The non-verbal section of the test evidenced poor correlations with the Iowa tests when compared with the results obtained from the verbal and total test. The means were highest in the highest SES area and lowest in the low SES area.

The Kuhlman-Anderson Test was easy to administer at all levels and had the added advantage of being short enough to administer during one class period at all grade levels. The mean and standard deviation stability was excellent at all levels and in all SES areas. This test produced the best correlations with the I.T.B.S. in each SES area. The similarity between the means in the high and middle SES areas constituted the major inconsistency of the test.

The California Test of Mental Maturity was not difficult to administer, however, the mean and standard deviation was good only in the high SES area. The language section of the test correlated highly with the verbal subtests of the I.T.B.S. Correlations with arithmetic were higher on the language section than the non-language portions.

The Primary Mental Abilities Test was easy to administer; however, it was the longest of the four tests at each level. The mean and standard deviation stability was the most inconsistent on this test and the greatest variability in all SES areas was produced by this test. The verbal sections of this test correlated well with the verbal subtests of the I.T.B.S. and the total score correlated consistently with all sections of the Iowa Tests. However, none of the Iowa subtests were correlated with the space relations and perceptual speed tests.

As a general conclusion, the authors stated that no one of the tests considered was proven exceptionally inferior or superior.

Smith, A.E. "Otis-Lennon Mental Ability Test." Journal of Counseling Psychology, 1970, 17(1), 91-92.

The series comprising the new Otis-Lennon Mental Ability Test provides for consistent testing of intelligence in grades K-12. The purpose of the series is "to provide comprehensive, carefully articulated assessment of the general mental ability, or scholastic aptitude." A single score reflecting the student's ability to reason with verbal and symbolic content is obtained. No claim is made for measuring innate intelligence. The items resemble the tasks required of students in the schools of this country and assume that "all pupils have had substantially equal opportunity to learn the types of things included in the test," and all are equally motivated. If the students do poorly on the test they will have difficulty in school and probably for the same reasons. The tests attempt to predict academic success and hence sample broadly from academic material. They attempt to measure "learned or developed abilities in the broadest sense."

No reading is required in the first three levels and there is a smaller percentage of verbal items than previously in the upper level tests. Such care taken to reduce the effects of reading handicaps on the student's performance is commendable.

The reviewer has some questions about the distinction between the Primary I and Primary II levels. He also suggests further research on the stability and power of the tests since the initial studies were conducted with somewhat above average students.

Yates, A. "Critique of Otis Quick-Scoring Mental Abilities Tests," in O.K. Buros (ed.) The Sixth Mental Measurements Yearbook; Highland Park, New Jersey: The Gryphon Press, 1965, 362.

This new form comprises three tests: the Alpha Short Form is designed for grades 1-4; Beta, suitable for grades 4-9, is a revision of the Intermediate Examination of the Otis Self-Administering Tests of Mental Ability; and Gamma, intended for high schools and colleges, is a revision of the Higher Examination of the older series.

The avowed purpose of the tests is to measure mental ability defined as 'thinking power or the degree of maturity of the mind.' In making up the tests the author's aim was to choose items which depended as little as possible on schooling, except that in the Beta and Gamma tests questions on vocabulary and arithmetic reasoning, recognized as being largely measures of achievement, are included.

The reliability coefficients quoted for these tests are not strikingly high. Therefore, the results of applying such a test should be interpreted cautiously. The evidence concerning the validity of the test for predictive purposes is somewhat slender. It is doubtful whether, for the normal purposes of classification and guidance within a school, teachers are likely to find the tests more serviceable than measures of attainment and their own judgments of their pupils' progress. The tests are obviously serviceable instruments, however, for the purposes of course classification when this had to be carried out without access to relevant information about children's previous educational progress.

INFORMATION BANK FOR
EXTENDED SCHOOL YEAR

These materials are meant to be used as abstracts or summaries, highlighting the major points of the articles or presenting only the most relevant normative information. They should be referred to in the same manner as one would refer to a journal such as Psychological Abstracts. More complete information on these sources, or sources not included here, may be found in your library.

This information bank is divided into four section, as follows: (1) References directly related to this problem; (2) Auxiliary References; (3) Descriptive and normative data about variables; and (4) Test critiques, validation studies, etc.

Alam, Sami J. "The Four-Quarter Plan and Its Feasibility for the Port Huron Area School District." Port Huron Area School District, 1970.

This proposed plan is for 4 quarters of 60 days each, with a system-wide 12-day summer vacation.

As the author sees it, these are the required conditions for such a plan to be successful:

1. Curriculum revision toward individualized instruction; precise statement of behavioral objectives.
2. Equal enrollment each quarter--through random assignment but with some attention to parent preference.
3. Improvement of some buildings--more maintenance people, air conditioning.
4. Elimination of smaller, less efficient buildings.
5. Revision in state law concerning child accounting rules, number of school days, athletic eligibility.
6. Additional millage.
7. Community acceptance and support.
8. Staff acceptance and support. The report includes a large abstracted bibliography.

Ann Arbor, Public Schools of the city of, 1970. "The Ann Arbor Split-Trimester Extended School Year Plan."

The Ann Arbor report proposes a system with the following features:

1. 216 days of school operation.
2. 6 split trimester terms, 36 days each.
3. Each student attends 5 out of 6 terms.
4. Universal 30-day summer vacation plus 6th term vacation.
5. Vacation terms determined by parent selection partially, plus assignment, to insure equal enrollment.
6. Grades K-6 are to be under a continuous progress basis.

The Economic Feasibility Committee reported:

1. Shortrun - Salaries for teaching staff will be the same as before, non-teaching staff salaries will increase, as will utility costs and transportation mileage. They figure a total increase of 4 percent annually. In addition are one-time conversion costs (curriculum revision, air conditioning). On the positive side, there will be 17 percent more utilization of existing equipment.

2. Longrun - Due to the increased enrollment capacity, the split-trimester plan would eliminate the current need for 5 new elementary schools, and set back considerably the need for a new junior high and high school, and also the need to staff them and pay interest on their bonds. However, a return to the semester schedule would be disastrous in terms of the building program that would then be required.

Instructional Committee Report:

Since no school has run on such a program, there is no hard data, but conceptually the program is worthwhile from the instructional standpoint.

Scheduling Committee:

In grades 7-12 there will be many more courses offered with a concomitant schedule complexity. They recommend increasing student and teacher involvement in scheduling.

Social Feasibility:

Included are copies of community surveys, the results of which are not in yet. They emphasize the importance of staff and parental support of the plan as essential to success.

Capital City, U.S.A., "Statement on Extended School Year."

The State Department of Education released today the following questions and answers about the controversial ESY plans being considered for trial adoption in several parts of the state. In issuing the statement, R.D. Areandde, director of the department's Office of Research and Evaluation, commented, "These are the questions most often asked about the ESY. We hope that by publishing their answers we will provide information and reassurance to the citizens of this state."

How Long Should the School Year Be?

The movement for a longer school year in this state is not new. History reveals a lengthening of the school year in rural areas and towns, while city schools have shortened their school year to adjust to legal requirements and monetary pressures. The following illustrates a pattern.

1. In 1837, the average length of the school year ranged from 4 to 12 months, e.g., all of one county except for a single town had a 12-month school year.
2. In 1867, the average time schools were in session in rural districts was 166 days; in cities, it was 211 days.
3. In 1898, the average school term for the state was 177 days, but in towns it was 171 days compared to 194 days in the cities.
4. In 1913, the legal school year was lengthened from 160 days to 180 days in an attempt to pressure rural areas to increase the amount of schooling offered farm children.
5. Today, the minimum school for the state is 180 days, but many pupils receive less than 180 days of instruction since schools can be legally closed for a number of reasons, such as teacher conference days.
6. National experience indicates that the school year is increasing at the rate of 1 day every year.

The Extended School Year Program refers to plans of school organization based upon the lengthening of the school year leading to a reduction of one or more years of schooling. While the proposals show a year can be saved at either the elementary or secondary levels, the recommendations formulated to date do not contemplate the saving of more than one year out of a 13-year sequence. Where extra time can be saved through the Extended School Year Program, schools are urged to modify their curriculum in order to broaden courses of study and to enrich the entire curriculum.

Can the School Day be Lengthened?

Not time alone, but how teachers and children use the time is the major consideration in answering this question. A school day with a capable teacher in a good learning environment, with adequate materials, can easily be lengthened without harming boys and girls. However, in rural areas, where children leave home at 7:00 a.m. to get the school bus and return at 4:30 p.m. or 5:00 p.m., with homework still to be done, something other than a longer school day is needed. The high school day must be measured in terms of subjects as well as hours.

Secondary school pupils could benefit from a longer school day that offered, instead of extensive homework assignments, extra time for study in an environment conducive to the development of good work-study patterns, independent research skills, and leadership qualities. The school day can be lengthened successfully if there are adequate vacations during the year and if there are ample opportunities to provide work which will offer purposeful and meaningful experiences to the students.

Is the Extended School Year Program Primarily an Economy Measure?

The Extended School Year Program will offer some solution to the problem of financing schools but even more significantly, it provides an opportunity for school officials to do more for children than they have ever done. Among the benefits are:

1. It can help to reduce the dropout rate.
2. It can make available additional classrooms to accommodate the increasing pupil enrollment.
3. Through the release of classrooms for the equivalent of one grade level in a school system, double sessions can be eliminated, classes can be reduced in size, and obsolete facilities can be abandoned.
4. The availability of special facilities (such as laboratories, shops, and libraries) will be increased.
5. The "E" (enrichment) term concept can provide time for more and better education for all types of children.
6. There will be a reduction in the number of teachers required in a school system with the result that additional fully qualified teachers will be available to work with more students.
7. It can lead to some savings in operating expenses and major savings in a capital outlay and debt service costs. Though education will cost less under the Extended School Year Program, it will be of higher quality.

Will the Extended School Year Program Lead to Year-Round Schooling?

The Extended School Year proposals recommended for this state will have little in common with the traditional concept of year-round schooling. Boys and girls can attend school for 204, 210, 215, or 220 days, but recommended school calendars will be based on the 204 to 210 day school year. This will provide pupils and teachers with a summer vacation ranging from 5 to 7 weeks.

What is the Nature of the School Calendar?

School administrators and business and industrial leaders, should work cooperatively on the development of a calendar to insure that the children's vacations coincide with those of the parents.

How Can a School System Expect to Save Money?

School systems can expect to save money with the adoption of an extended school year program through the reduction of the number of teaching positions and the release of classrooms brought about by the decrease in total school enrollments. The decrease in school enrollments is the result of the creation of new enrollment flow patterns after an adjustment or transition period. Through the redistribution of educational activities along a new time line, one chronological year of schooling is eliminated. The absorption of this year of schooling is the cause of the decrease in enrollment. The reduction is equal to the number of students that would have been in the highest grade in the regular school year program.

Extended school year programs based on the saving of one year in six results in a smaller total enrollment through the elimination of one grade.

Projected enrollments for school systems usually vary for different grades. This will be especially noticeable in rapidly growing communities. It will also be true in the secondary schools where upper grade classes show the effect of dropouts. This factor can influence predicted savings in terms of classrooms or teachers because the number of teachers or classrooms saved is based on the size of the highest grade in the school.

Extended school year programs based on the savings of one year in six result in a reduced school enrollment equal to the class that graduates one year earlier.

What Happens to Teacher Salaries?

Teachers can be employed to teach for 12, 11, 10 or fewer months; they should be paid according to their length of service.

Will Teachers Be Attracted to the Teaching Profession?

Higher annual salaries will make teaching more attractive. Fewer teachers will be tempted to leave the profession if they can be assured year-round employment and a higher salary.

Teachers who want a part-time work year may be unhappy. However, school boards can and should be prepared to employ some teachers for less than a ten-month period.

How Can Teachers Enroll in Courses in the Summer?

Only 10 to 15 percent of the total teaching staff return to college in the summer. Most teachers obtain higher degrees or meet certification requirements by taking courses after school or on Saturdays. Where this is impossible, they should be allowed to work a shorter school year or accumulate vacation time which can be taken when college summer schools are in session.

Experienced teachers may be eligible for sabbatical leaves.

Can Teachers Endure a Longer School Year?

Teachers who worked in extended school year programs, federally sponsored summer programs, or summer schools have repeatedly demonstrated they have suffered no ill effects from being involved in a lengthened work year.

Can Children Endure an Extended School Year?

ESY programs, as well as federally and locally sponsored summer programs, have repeatedly demonstrated that children suffer no ill effects from their involvement in a lengthened school year program.

Research studies have shown that children are better off socially, emotionally, physically, and academically after taking part in lengthened school year programs.

Does All Learning Stop With the Onset of Hot Weather?

Research studies have shown that children learn as well in July and August as they do during the regular school year.

Can Schools Operate in the Summer Without Air Conditioning?

Research studies have shown little, if any, difference in the learning that goes on in air conditioned classrooms and classrooms without air conditioning.

Since private homes, public buildings, and cars are constantly being air conditioned, it is only logical to extend air conditioning to schools which tend to get warm in June and September as well as in July and August. All existing schools can be readily air conditioned through the expenditure of a small fraction of the potential dollar savings accruing to local school districts by rescheduling the school year.

How Can Building Repairs and Maintenance Programs be Conducted if Schools Are Open in the Summer?

At least 95 percent of all repairs and maintenance can and should be completed when schools are in session. Generally, this can be done through a rescheduling of janitorial or custodial and maintenance staff duties. A school should not have to cease operations to be cleaned or have general repairs made any more than a bank or office building.

Do Children Need the Summer to Recuperate After a Long Period of Schooling?

Children need a rest or change of pace several times a year, not just once. Several lengthened school year designs provide such breaks at the end of 8, 9, or 10 weeks. These 2 week vacations should suffice since there is no evidence that children or teachers require 10 to 12 weeks to recuperate.

Will Parents be Able to Take Vacations with Their Children?

Recent studies show a change in vacation patterns. Department of Labor statistics show an ever increasing number of employees receive 3, 4, or 5 weeks of vacation a year. However, many of them are limited to a two-week vacation in the summer, the rest of their vacation time being taken during some other season when schools are in session. The ESY opens the door to year-round vacations since the children can be given four or five vacations in a year. With such school calendars, parents should be able to vacation with their children in any season they choose.

Approximately 50 percent of all vacationers take their vacations in the summer, the rest take them in the fall, winter, or spring. For these people an extended school year plan which provides multiple 2 or 3 week vacations over the course of the year can be a boon to parents who have multiseasonal interests, i.e., fishing, hunting, skiing, snowmobiling, boating, traveling (Floridites), etc.

How Can Operating Expenses be Reduced if Schools are in Use for Eleven or Twelve Months?

Savings accrue to a school district if the ESY reduces the amount of school space needed. Less money is spent for heat, light, power, custodians, administrators, clerical staff, equipment, and maintenance or operation. These savings more than cover the cost of an extra month's operation if the school is kept open.

Can Money Be Saved by Lengthening the School Year Because Teachers Will Have to Receive Higher Salaries?

ESY plans which lead to reduction in student enrollments at any given period of time will require fewer teachers. This reduction in staff size leads to savings in teacher salaries and fringe benefits. They will more than offset payments for an 11th or 12th month salary of a smaller teaching staff.

Driscoll, Thomas F. "Movement Growing for Year-Round Schools." Ann Arbor News, July 25, 1971, p. 12.

Interest in extended school year plans has been growing so rapidly that a National Year-Round School Seminar has been held in the U.S. for the last three years.

Basically, there are two types of plans now in operation:

1. The 45-15 notation school in which only three-fourths of the pupils attend class at the same time and other one-fourth are on vacation. Every student goes to class for 45 days (nine weeks) and then takes a 15-day vacation (three weeks). The rotation keeps going all year, even in summer.

2. The quarter-system school in which a student can satisfy the requirements for a year's academic credit by attending class during any three of the four quarters in a year.

This summer there are 45-15 schools operating in California, Illinois, Missouri, Vermont, and Virginia. By fall there will be quarter-system schools in Georgia, Maryland, and Pennsylvania.

Both the 45-15 and the quarter-system schools offer the advantage of 12-month utilization of school facilities.

They both can also reduce the need for additional school construction because some children are always on vacation, thus keeping schools from becoming overcrowded.

The 45-15 plan eliminates the three-month vacations, when the long days soon begin to drag for the children and their mothers and the youngsters forget so much of what they learned in the previous school year.

The principal criticism of quarter-system schools, which have been tried before in this country, is that they retain the three-month break. If pupils are required to attend school only during three of the four quarters, thus restricting enrollment to three-fourths at any one time, some children inevitably must take three-month vacations in winter. This has always met with opposition from parents.

As a result, most quarter-system schools in operation today are optimal, not mandatory.

There appears to be more widespread interest across the country in 45-15 than in the quarter system. This unquestionably is due to taxpayer resistance everywhere to higher school costs, and the promise of 45-15 to help keep these costs down.

Heald, James, et. al. The Feasibility of Extending the Educational Experiences of Secondary School Students in Haslett, Okemos, and East Lansing, Michigan. The Extended School Year Committee of the School District of East Lansing, Okemos, and Haslett, 1969.

This feasibility study develops an extended school-year program oriented to the enrichment of education rather than the financial advantage (which the authors see as possible, but secondary). They are concerned here strictly with high school.

These are the features of their plan:

1. Five nine-week terms--offering more flexibility, choice, and less intimidation for students wishing to try difficult courses.
2. Travel and work study for credit.
3. Attendance options (see below).
4. Increased interdistrict cooperation--possible specialization of facilities.
5. Summer term equal to others--extended opportunities for certain activities: PE, biology, etc.

Attendance Options:

1. 4 terms in, one out (in whatever order desired).
2. 4 terms in, one special interest, work/study.
3. 5 terms combined with special interest, work/study.
4. 5 straight academic terms.

An important feature is an extensive search of the community for work/study activities.

Hermansen, K.L. and Gove, J.R. The Year-Round School. Hamden, Conn.:
Linnet Books, 1971.

This book essentially details the progress of the Valley View, Illinois 45-15 extended school year plan. However, the opening chapters contain a concise and informative history of the year-round school movement, particularly in this country. An extensive list of advantages and disadvantages is included.

The Valley View compulsory 45-15 program, begun in the summer of 1970, enrolled between 1450 and 1750 students in each of its four teaching cycles at the primary and junior high school level. The plan was adopted as an alternative to placing a large percentage of the district on double shifts or increasing class size.

Procedures Preceeding the Adoption of the Plan Included:

1. Extensive communication contacts with the community.
2. Investigation of the legal ramifications.
3. Detailed communication and negotiation with teachers.
4. Consultation with systems analysts in scheduling the students.
5. Analysis of the financial aspects of the proposed program.

Although the 45-15 plan had been in effect for only a few months at the time of this book's publication, some tentative conclusions seem warranted:

1. Teachers generally like the 45-15 plan.
2. Few technical administrative difficulties were experienced.
3. Students' learning retention improved.
4. Financial savings are not found in operating costs, but are experienced in capital expenditures.

Little statistical evidence is presented. However, the authors state that a thorough evaluation of student achievement under the 45-15 program is planned.

In general, this book is a rather popular treatment of the year-round school concept.

Hoover, Dennis. "Year-Round Classes Seen Around Corner." The Dallas Morning News (December 19, 1966).

Year-round operation of the public schools in Texas and other states may be just around the corner. Growing numbers of professional and lay education leaders say the traditional summer shutdown of buildings, equipment and teaching is a waste that taxpayers and the nation can no longer afford. They point out that all-year utilization of school plants could:

(1) Save millions of dollars in school construction outlays.
(2) Conserve scarce teacher talent.
(3) Expand educational opportunity for pupils.

All three are viewed as imperatives as the educational demands of the space age accelerate. The quarterly system, rather than the trimester or other plan of year-round operation, seems to be generating the most interest. Adoption of the four-quarter system would immediately expand a school buildings' capacity by one-third.

Dr. W. Scott Bauman, associate professor of finance at the University of Toledo, has made perhaps the most complete study of the nation's public schools quarterly system's advantages. He estimates that had the nation's public schools been using this plan in fiscal 1960 capital expenditures would have been cut 25 percent, operating expenditures 9 percent. Total savings would have been almost $2 billion. Teachers would find themselves, at last, in a full-time profession at full-time pay.

A nonprofit citizens' group, the National School Calendar Study Committee, has been formed to stir interest in year-round school programs. Its founder and organizing chairman is George M. Jensen, a corporation president who served five terms as president of the Minneapolis, Minnesota board of education. Many believe that year-round school would lessen juvenile delinquency, since only one fourth of pupils would be free of school discipline at a time. Jensen said most superintendents around the country still look askance at the year-round calendar, but an increasing number favor the proposal.

The quarterly plan has been discussed for decades but seldom tried. The most prominent trials were in two small Pennsylvania districts, Aliquippa and Ambridge, in the 1930's. After a few years both districts returned to the traditional system. Why? "These districts deviated from the standard pattern because of critical building shortages," said Jensen. "The communities were forced to accept a change in customs without being sold on how the new system could strengthen education. It was hard for one district to do it while the rest remained in their old, comfortable pattern."

There is evidence that ease of travel and affluence are changing the traditional reverence for "summer vacations only." Jensen said businessmen with whom he's discussed the year-round school idea are intrigued by it and believe it merits serious investigation.

"The New Trend: Year-Round Schools." U.S. News and World Report. July 26, 1971; 35-37.

More than 600 school districts in the U.S. are studying the possibilities of extending the school year. Though even advocates of the concept admit that the idea has to be sold to parents, who have to adjust their family routines to it, and to state or local governing bodies, which have to approve the financing; 84% of the educators surveyed recently predicted that all schools will be open the year round within the next 15 years.

Both sides of the question have supporters. Proponents of the plan claim that "the year-round school can free curriculum from the constraints of tradition, cut failures and dropouts, give teachers more money, reduce over-crowding, use fewer school buildings, and possibly save money--all at the same time."

"Opponents of the extended school year argue that it would increase costs in many cases, especially in start-up years; add to the academic pressures already applied on students, violate the 'sanctity' of the American summer vacation, and limit extra curricular activities in schools."

At least twenty-seven school systems in twelve states now offer year-round public schooling in some form.

Rice, Arthur J. "Atlanta Schoolman Discusses His Year-Round School Program." Nations Schools, Vol. 86, No. 6, 1970, 12.

John W. Letson, Atlanta's Superintendent of Schools, explained that the school system spent two years in planning and organizing for the change from a traditional program to an extended school year.

Dr. Letson explained Atlanta's rationale for the change: "We did not undertake this program as a means of saving money. We undertook it with the hope of providing a better educational program and greater educational opportunities for the amount of dollars that we had to spend. The cost of school buildings is minor in comparison with the annual cost of the instructional program. But we are not minimizing or overlooking the economics in the more continuous use of the school buildings. Insofar as administration and other non-teaching services are concerned, we already have the personnel on a year-round basis, so why shouldn't they be utilized for a year-round program?"

Letson reported that "teacher reaction to the program has been very favorable because a teacher can take time for study or vacation if he wishes or he can be employed on a full-year program at a larger salary." Student and public reaction has also been favorable.

Start Teaching All Year. Freeland, Michigan Community Schools Extended School Year Committee, 710 Powley Drive, Freeland, Michigan 48623, 1970.

This report develops a rather complicated trimester plan. Here a trimester consists of two terms of 28 days (a 60-day block) with a 28-day vacation at the end. A full year is three trimesters, with a 10-day system-wide vacation in August. The scheduling plan provides for three groups such that two groups are always in attendance. To bring the school year from 160 days as provided by the trimester plan to 180 as required by the state, the school day is lengthened.

The report concludes that a poll of the community is required and that an information compaign be instituted. All year school will not reduce costs initially, but will do so after implementation is completed, as well as allowing for possible individual instruction.

Thomas, Steven C. "Valley View's 45-15 Year-Round School." Today's Education, November 1971, 42-43.

The 45-15 plan is a compulsory system consisting of four blocks of nine week (45 day) sessions, each followed by a 15-day (3 week) vacation. Students are scheduled into the groups on a geographic basis to permit siblings and friends to be in school and on vacation together. Only three groups attend school at once. The groups maintain their order of rotation, attending 180 days. Traditional holidays are unchanged, and schools are closed ten days in late June and early July for maintenance.

These effects were mentioned:

1. On space--the one third reduction in utilization was made up by increased enrollments.
2. On learning--vacations are more frequent, but seem to be less disruptive. However, teachers only know a student nine weeks and this encouraged depersonalization. Fatigue is becoming a factor in teacher effectiveness.
3. On salaries--the plan allows teachers to choose the length of their working year.
4. On services--more efficient use of all facilities--libraries, labs, buses, etc.

Utica, Michigan, "Four-Quarter Staggered School Year." Utica Community Schools, 1970.

This report considers a four-quarter plan in which each student attends 3 out of 4 quarters, for a standard 180 day year. Reasoning that any extended school year plan is doomed to failure without adequate planning, careful conversion and community support they propose a ten year, five-phase program;

1. Feasibility study (1 year).
2. Communications phase--community information and involvement (1 year).
3. Tooling up--prepare for pilot study, curriculum revision (3 years).
4. Five-year experimental program.
5. Decision by school board.

The report includes a large annotated bibliography on ESY, an extensive detailed history of ESY and its implications for education and society, and surveys of all involved parties--staff, students, parents, and others in the community, and business/industry.

Year Round School: Is It Feasible? Northville Board of Education, Northville Public Schools, 303 W. Main Street, Northville, Michigan 48167, 1970.

The purpose of this study was to determine the feasibility, economic and attitudinal, of a year-round school program. First, the report identified a number of formats:

1. The quadmester - Four quarters of 12 weeks; one-quarter of the population is on vacation, students attend 3.

2. Trimester - Three terms of 75 days; one-third of the population is on vacation.

3. Continuous progress; students can reduce length of school career porportioned to ability.

4. Twelve-four; four twelve-week sessions with a four-week vacation at the end of 48 weeks of school (staggered).

5. Multi-trails; an eleven-month modular scheduling program.

The study concludes that the first plan is least likely to encounter resistance, although they suggest that the continuous progress plan could be useful for the K-5 level. They then recant, saying that the year-round school concept isn't very useful for K-3.

The report includes a number of surveys of relevant populations; students (secondary level), teachers, parents, taxpayers and industry (to produce an intelligent public to poll, they found it necessary to engage in a large-scale education program on extended schools).

Basic findings of this quite subjective report are these:

1. Construction costs can be reduced drastically.
2. Operations costs will stabilize.
3. Costs for teaching aids will be reduced.
4. Educational programs can be improved.
5. Conversion is possible over a four-year period, with state aid.

Note: All costs are figured on a per-pupil basis.

ELEMENTARY SCHOOL INFORMATION - FAIR CITY

					INFORMATION FOR 9-72						
INDEX	NAME	ADDRESS & TELEPHONE	OPENED	ADDITION	Teaching Stations	Classrooms in Use	Portables	Enrollment	Teachers	Site (Acres)	PER PUPIL COST
1	L.J. Horner	2670 Tyler St. 936-3566	1957		12	11	0	367	12	10	$605
2	P.P. Pumpkineater	2560 Johnson Ave. 158-8565	1941	1960	27	26	2	808	27	11	$612
3	Knaveofhearts	1608 Douglas St. 693-0266	1953	1965	21	20	0	630	21	9	$625
4	Jackandjill	600 Hamilton St. 293-0622	1923		25	24	1	786	25	8	$597
5	H.D. Dock	2775 Burr Drive 168-2791	1961		21	20	0	651	21	9	$618
6	M. Goose	1414 Jay Avenue 608-4686			22	20	0	660	21	10	$621
7	Lamb	4250 Lee Street 904-0471	1959		25	23	1	714	24	11	$630
8	L.M. Muffet	2935 Grant Avenue 691-4700	1967		16	14	0	455	15	11	$627
9	J. Sprat	2135 Allen Lane 893-0265	1940		21	17	0	457	20	15	$682
10	Calicocat	3540 Darwin Ct. 719-2663	1955		28	25	1	772	27	17	$701
11	T. Blindmice	800 Lafayette Dr. 888-6866	1970		25	22	0	666	24	18	$710
12	H.D. Diddle	825 Patton Ave. 821-6597	1922	1951	22	20	0	621	22	14	$699
13	O.K. Cole	3800 Stowe St. 895-7771	1960		26	24	1	762	25	12	$660

(Continued)

					INFORMATION FOR 9-72						
INDEX	NAME	ADDRESS & TELEPHONE	OPENED	ADDITION	Teaching Stations	Classrooms in Use	Portables	Enrollment	Teachers	Site (Acres)	PER PUPIL COST
14	Shaftoe	344 Anthqny Ave. 650-4665	1969		27	24	1	766	26	15	$671
15	M.M. Contrary	2250 Keyes Ct. 564-8760	1958		19	15	0	339	18	18	$705
16	Inashoe	920 Frost St. 561-6623	1965		22	20	0	662	21	13	$640
17	S. Simon	4377 Blackwell Ave. 112-3434	1956	1963	18	17	0	616	18	10	$599
18	Hubbard	3550 King Drive 179-4150	1944	1952	16	15	0	554	16	11	$590
19	Sixpence	2775 Wilson St. 178-0200	1952		11	11	0	420	11	9	$593
20	B.B.B. Sheep	2100 Harding St. 194-0620	1925		13	12	0	441	12	7	$580
21	L.B. Blue	2543 Lowell Rd. 197-3774	1962		8	7	0	241	7	8	$586

St. John, Nancy. "Thirty-Six Teachers: Their Characteristics and Outcomes for Black and White Pupils." American Educational Research Journal, 1971, 8(4), 635-648.

The study was part of a larger investigation into the achievement and attitudes of children in interracial sixth grade classrooms in a large Northern city. Eighteen schools were randomly drawn from cells in a matrix representing the racial and social class distribution of those elementary schools in the city with five or more black sixth graders. Two classrooms were selected from each school (again randomly). The final sample included all 956 children in these 36 classrooms, of whom 497 were White, 411 Negro, and 48 of other ethnic backgrounds (Chinese, Puerto Rican, etc.). The classrooms varied from 7 to 100 in the percentage of black children enrolled and from lower to middle in mean socioeconomic status (SES). School racial mixture and SES were to a degree independent. Among the schools of lowest SES half were majority white and among the schools with many middle class pupils one was all black.

The 36 classes were observed each for a week by one of a staff of eight. For four days the staff member ("first observer") sat in a backrow desk,kept a running narrative of activities and behavior, scores teacher-pupil and pupil-pupil interaction, interviewed the teacher and administered attitude and sociometric tests to pupils. On one day she exchanged classrooms with the staff member assigned to the other sixth grade room in the same school, ("second observer"). At the end of the week, both observers wrote summary comments on the teachers' academic policies and differential treatment of white and black pupils and scored them on a modified version of Ryans (1960) Characteristics of Teachers Scale. Neither observer had examined pupils' test scores and grades before rating the teacher; a third staff member copied these data from the school records.

The evidence tends to support the proposition that teachers play an important role in the interracial classroom and contribute more to the academic growth of black than of white children. One important finding is the necessity of distinguishing between various dimensions of teaching behavior. A factor analysis of the ratings of teachers on a modified Ryans Scale by observers who spent a week in each classroom produced three clear factors. The label child-oriented was assigned the factor with high weights on kindly, optimistic, responsive, understanding, democratic and adaptable. Task-oriented is shorthand for the factor with high loadings on fluent, broad, stimulating and confident. "Fair" refers to the factor in which ratings on racially fair, generally fair, and systematic were high. Both zero order correlation and multiple regresstion analyses indicate that these factors correlate with pupil outcomes quite differently for blacks and whites.

For blacks, child-orientation or interpersonal competence in teachers contributes significantly to reading growth and seems to lead to improved conduct and attendance and belief in teacher's approval. Fairness in teachers contributes to improved conduct and sense of environmental control, as well as to friendliness from white classmates. Task-orientation or subject competence contributes to black reading growth, but shows a low negative correlation with other variables. The fact that neither the verbal fluency of teachers (as rated by observers) nor the length of their experience is associated significantly with pupil outcomes, whereas subjective but independent ratings by observers are significantly related to outcomes, suggests that future studies of equality of educational opportunity should use the anthropologist's observational tools, rather than depend on more "objective" or quantifiable indices of teaching quality.

TEACHER SALARY SCHEDULE

FAIR CITY PUBLIC SCHOOLS
Elementary & Secondary Levels

Years of Approved Experience	Less Than B.A.	B.A. Degree	M.A. Degree & Beyond	Ph.D.
0-2	$5168.80	$5964.00	$ 7,952.00	$10,735.20
3-5	$5566.40	$6759.20	$ 8,349.60	$11,132.80
6-8	$5964.00	$7554.40	$ 8,747.20	$11,928.00
9-11	$6361.60	$7952.00	$ 9,542.40	$12,723.20
12-14	$6759.20	$8349.00	$10,337.60	$13,518.40
15+	$7156.80	$8747.20	$11,928.00	$15,506.40

California Test of Mental Maturity (Short Form) (1 Form)

Purpose: To provide information about the functional capacities that are basic to learning, problem-solving, and responding to new situations.

Type of Test: Group intelligence

Range: Grades K-16

Time for Administration: 34-48 minutes

Cost: $4.20 per 35 tests, $.10 per scoring key

Subtests: Opposites, Similarities, Analogies, Delayed Recall, Numerical Values, Number Problems, Verbal Comprehension

Levels:
0 - Preprimary
1 - Primary
1H - Spans range between grades 3-4
2 - Elementary
2H - Spans range between grades 6-7
3 - Junior High
4 - Secondary
5 - Advanced

Scores: Scaled; Language IQ, Non-Language IQ, Total IQ

Nature of Test:

The California Short-Form of Mental Maturity consists of seven administrative test units, measuring aspects of mental ability, which contribute to a pattern of summary and derived scores (mental ages, intelligence quotients, standard scores, stanines, and percentile ranks) that are interpreted within a framework of inter and intra-individual differences. In addition to assessing the development of an individual or group with reference to national performance standards at each age level, the test results provide data as to the nature and potential of the abilities possessed by the individual. The Short-Form thus serves both survey and analytical purposes for educators, counselors, psychologists, and employers in a wide variety of testing situations.

California Short Form Test of Mental Maturity - Mean Intelligence Quotients & Standard Deviations of Mental Maturity Series, 1963 Revision & the Stanford-Binet Intelligence Scale Form LM 1960 Revision, Based on the Performance of the Sample Groups

Short-Form Level	Type of CTMM IQ	IQ Means		IQ SD's	
		Cal.	Binet	Cal.	Binet
Level 0	Total	109.4	108.2	14.9	14.8
	Language	109.4		16.6	
	Non-Language	107.6		14.	
Level 1		Cal.	Binet	Cal.	Binet
	Total	110.2	109.2	15.1	15.0
	Language	109.3		15.5	
	Non-Language	109.8		15.5	

Short-Form Level	Type of CTMM IQ	IQ Means		IQ S.D.'s	
Level 2		Cal.	Binet	Cal.	Binet
	Total	103.7	106.7	14.2	13.8
	Language	104.5		15.0	
	Non-Language	102.3		14.2	
Level 3		Cal.	Binet	Cal.	Binet
	Total	105.5	106.5	15.0	14.9
	Language	104.9		14.8	
	Non-Language	105.0		15.5	
Level 4		Cal.	Binet	Cal.	Binet
	Total	108.9	111.8	13.9	14.3
	Language	106.1		14.5	
	Non-Language	109.2		14.0	
Level 5		Cal.	Binet	Cal.	Binet
	Total	113.9	116.4	14.5	14.9
	Language	112.1		14.5	
	Non-Language	111.9		14.1	
All Levels		Cal.	Binet	Cal.	Binet
	Total	108.6	109.7	15.0	15.0
	Language	107.8		15.4	
	Non-Language	107.6		15.0	

California Test of Mental Maturity (Short Form)

Variables Level 0		Reliability Short Form	Validity Coefficients of Correlation
I.Q.	Total	.78	.68
	Language	.70	.61
	Non-Language	.59	.56
M.A.	Total	.78	.80
	Language	.70	.74
	Non-Language	.59	.71
Level 1			
I.Q.	Total	.83	.70
	Language	.73	.64
	Non-Language	.72	.57
M.A.	Total	.83	.89
	Language	.73	.87
	Non-Language	.72	.83
Level 2			
I.Q.	Total	.95	.74
	Language	.94	.70
	Non-Language	.89	.61
M.A.	Total	.95	.80
	Language	.94	.76
	Non-Language	.89	.69

Variables Level 0	Reliability Short Form	Validity Coefficients of Correlation
Level 3		
I.Q. Total	.91	.78
Language	.90	.77
Non-Language	.81	.65
M.A. Total	.91	.78
Language	.90	.77
Non-Language	.81	.63
Level 4		
I.Q. Total	.92	.71
Language	.91	.68
Non-Language	.83	.57
M.A. Total	.92	.76
Language	.91	.73
Non-Language	.83	.63
Level 5		
I.Q. Total	.91	.75
Language	.90	.75
Non-Language	.82	.56
M.A. Total	.91	.75
Language	.90	.75
Non-Language	.82	.57
Combined		
I.Q. Total	.91	.73
Language	.90	.69
Non-Language	.82	.60
M.A. Total	.91	.96
Language	.90	.96
Non-Language	.82	.94

California Test of Mental Maturity (Critique)

See Also:

Anderson, H.E. and Leton, D.A. "Factor Analysis of the California Test of Mental Maturity." Educational and Psychological Measurements, 1964, 24(3), 513-523.

Norman, R.D. and Daley, M.F. "The Comparative Personality Adjustment of Superior and Inferior Readers." Journal of Educational Psychology, 1959, 50(1) 31-36.

California Test of Personality (2 Forms)

Purpose: To identify and reveal the status of certain highly important factors in personality and social adjustment usually designated as 'intangibles.'

Type of Test: Group personality

Range: Grades 1-adult (may also be used for kindergartin)

Time for Administration: 45-60 minutes

Cost: $3.50 per 35 tests

Subtests:

- Self-Reliance
- Sense of Personal Worth
- Sense of Personal Freedom
- Feeling of Belonging
- Withdrawing Tendencies
- Nervous Symptoms
- Social Standards
- Social Skills
- Anti-Social Tendencies
- Family Relations
- (School/Occupational) Relations
- Community Relations

Scores: Scaled for each subtest:

Personal Adjustment
(Sum of first 5 subtests)

Social Adjustment
(Sum of last 5 subtests)

Total Adjustment
(Sum of personal & social adjustment)

Nature of Test:

The California Test of Personality has been designed to identify and reveal the status of certain highly important factors in personality and social adjustment usually designated as intangibles. These are the factors that defy appraisal or diagnosis by means of ordinary ability and achievement tests. Measurements of capacity, skill, and achievement, important as they are, do not constitute a complete picture of a functioning personality.

California Test of Personality - Means & Standard Deviations of T Scores on California Test of Personality Variables for Both Groups

Variables	Inferior Readers		Superior Readers	
	Mean	SD	Mean	SD
Personal Adjustment:				
Self-Reliance	46.90	6.77	52.28	7.27
Sense of Personal Worth	50.49	8.30	57.33	7.36
Sense of Personal Freedom	46.17	7.57	53.17	6.88
Feeling of Belonging	47.41	8.81	56.50	6.79
Withdrawing Tendencies (Freedom from)	51.32	7.84	59.38	6.96
Nervous Symptoms (Freedom from)	49.44	11.43	55.17	7.61
Social Adjustment:				
Social Standards	43.95	8.98	53.83	7.36
Social Skills	49.17	9.84	54.36	10.19
Anti-Social Tendencies (Freedom from)	44.80	10.21	52.14	9.44
Family Relations	45.12	8.47	52.52	6.83
School Relations	50.05	9.79	57.71	7.14
Community Relations	43.07	8.72	50.43	5.22
Total Adjustment:				

California Test of Personality

Reliability:	Prim.	Elem.	Inter.
Components:	r	r	r
Personal Adjustment	.83	.93	.93
A. Self-Reliance	.73	.64	.70
B. Sense of Personal Worth	.82	.79	.75
C. Sense of Personal Freedom	.73	.79	.92
D. Feeling of Belonging	.70	.77	.97
E. Withdrawing Tendencies (Fdm.)	.71	.83	.83
F. Nervous Symptoms (Fdm.)	.87	.82	.82
Social Adjustment	.80	.92	.94
A. Social Standards	.51	.59	.94
B. Social Skills	.70	.73	.75
C. Anti-Social Tendencies (Fdm.)	.82	.77	.86
D. Family Relations	.82	.77	.92
E. School Relations	.70	.78	.86
F. Community Relations	.78	.79	.87
Total Adjustment	.88	.94	.96

Reliability Components:	Sec.	Adult
	r	r
Personal Adjustment	.90	.93
A. Self-Reliance	.70	.81
B. Sense of Personal Worth	.77	.66
C. Sense of Personal Freedom	.84	.87
D. Feeling of Belonging	.91	.87
E. Withdrawing Tendencies (Fdm.)	.86	.86
F. Nervous Symptoms (Fdm.)	.82	.81
Social Adjustment	.89	.93
A. Social Standards	.84	.76
B. Social Skills	.86	.70
C. Anti-Social Tendencies (Fdm.)	.84	.75
D. Family Relations	.91	.91
E. School Relations	.73	.84
F. Community Relations	.78	.77
Total Adjustment	.93	.95

California Test of Personality

Validity:	Content & Construct	Concurrent & Predictive
Personal Adjustment	Very Good	Poor
A. Self-Reliance	Good	Poor
B. Sense of Personal Worth	Good	Poor
C. Sense of Personal Freedom	Good	Poor
D. Feeling of Belonging	Good	Poor
E. Withdrawing Tendencies	Good	Poor
F. Nervous Symptoms	Very Good	Poor
Social Adjustment	Very Good	Poor
A. Social Standards	Good	Poor
B. Social Skills	Good	Poor
C. Anti-Social Tendencies	Good	Poor
D. Family Relations	Good	Poor
E. School Relations	Good	Poor
F. Community Relations	Good	Poor
Total Adjustment		

California Test of Personality (Critique)

See Also:

Norman, R.D. and Daley, M.F. "The Comparative Personality Adjustment of Superior and Inferior Readers." Journal of Educational Psychology, 1959, 50(1), 31-36.

Deutsch SES Index

The index of cultural deprivation (C.D.) includes the following three components:

1. The father's occupation on a 4-point scale (or the mother's occupation if no father is in the home).

1 point - unskilled or unemployed
2 points - semiskilled
3 points - skilled
4 points - professional

2. Number of years of education completed by the parents (an average of the two, or the mother's education only if no father is in the home).

3. Density in the home is defined as the number of rooms divided by the number of people living in the home.

> In the number of rooms are included the kitchen and the bathroom. A shared bathroom is counted as half a room.

Occupation and education are given a full weight, but density is given a 1/2 weight. Each component is divided by its standard deviation to equate the variability of all components. In other words, the C.D. rating is the sum of three z scores, except that density is given a 1/2 weight.

The above gives a definitional formula. In actuality, the following computation formula is used:

$$1/2\ (\text{Education}) + 2\ (\text{Occupation}) + 2\ \frac{\text{Rooms}}{\text{People}}$$

Reflected in the computational formula are the following approximate standard deviations from the original Perry School population: 2 for education, 1/2 for occupation, and 1/4 for density.*

An example from an actual case may best clarify the computational formula. If pertinent data are:

Father's occupation: Unskilled factory work (1 point)
Mother's education: 11 years
Father's education: 7 years
Number of rooms: 6
Number of people living in home: 9

$$\text{C.D.} = 1/2(9) + 2(1) + 2(\tfrac{6}{9}) = 8.3$$

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*A score of 10 or below makes the family a low SES family and thus "culturally deprived."

Metropolitan Achievement Test (2 Forms except for Primary I(1))

Purpose: To measure "achievement in the important skill and content areas of the elementary and junior high school curriculum"

Type of Test: Group achievement

Range: Grades 1.5-12

Time for Administration: Varies from 85-316 minutes

Subject Tests, Number of Items and Working Time

	Primary I		Primary II		Elemen.		Intermed.		Advanced	
Subtest	Items	Time	Items	Time	Items	Time	Items	Time	Items	Time
Word Knowledge	35	15	37	18	50	15	55	14	55	14
Word Discrimination	35	12	35	12	36	12				
Reading	45	35	51	35	44	22	44	25	45	25
Spelling			30	10	40	20	55	17	55	17
Arith:Concepts & Skills	63	23								
Prob. Solving & Concepts			42	15	35	26	48	35	48	35
Computation			30	10	47	30	48	38	45	35
Language:Usage					24	10	35	13	24	8
Punctuation & Capitalization					36	12	36	9	38	7
Parts of Speech-Grammar							10	4	20	10
Kinds of Sent.									10	4
Language Study Skills							28	16	28	16
Social Studies Information							60	20	60	20
Social Studies Study Skills							29	26	39	36
Science							55	20	55	20

Cost: $6.25 per 35 tests, $1.20 per manual, $2.00 per 35 cummulative record cards.

Scores: Raw; one for each subtest.

Nature of Test:

Metropolitan Achievement Tests comprise a coordinated series of measures of achievement. At each level Metropolitan includes tests covering the most important knowledge or skill areas in the grade or grades for which that level is intended. The tests in each battery, the number of questions in each test and the working time required are summarized in the chart above. The various subtests yield comparable results so that the teacher may readily infer particular strengths and weaknesses of a pupil or class.

Subtests: Primary I (Grade 1.5-1.9)
Word Knowledge
Word Discrimination
Reading
Arith:Concepts & Skills

Primary II (Grade 2)
Word Knowledge
Word Discrimination
Spelling
Reading
Problem Solving & Concepts
Computation

Elementary (Grades 3-4)
Word Knowledge
Word Discrimination
Spelling
Language Usage
Reading
Problem Solving & Concepts
Computation
Punct. & Capitalization

Intermediate (Grades 5-6)
Word Knowledge
Spelling
Language Usage
Parts of Speech-Grammar
Language Study Skills
Social Studies Study Skills
Reading
Problem Solving & Concepts
Computation
Punct. & Capitalization
Soc. Studies Information
Science

Advanced (Grades 7-9)
Word Knowledge
Spelling
Language Usage
Parts of Speech-Grammar
Kinds of Sentences
Social Studies Information
Science
Reading
Problem Solving & Concepts
Computation
Punct. & Capitalization
Language Study Skills
Social Studies Skills

High School Battery (Grades 9-12)
Reading
Spelling
Language
Language Study Skills
Social Studies Study Skills
Social Studies Vocabulary
Social Studies Information
Math. Computation & Concepts
Math. Analy. & Prob. Solving
Scient.Concepts & Understand.
Scientific Information

Subtests:

Grade 1 (Primary I)	Means	SD
Reading:Word Pictures (Knowledge)	24.81	10.89
Reading:Word Recognition (Reading)	17.88	5.67
Reading:Word Meaning (Discrimination)	14.84	8.88
Numbers (Concepts & Skills)	47.52	12.82
Grade 2 (Primary II)		
Reading	33.36	11.83
Word Meaning (Word Discrimination)	48.82	22.48
Arith. Fundamentals (Computation)	44.88	12.77
Arith. Problems (Prob. Solving & Concepts)	11.78	8.40
Spelling	15.68	6.28

Subtests:	Elementary (Grade 4.1)	Means	SD
	Word Knowledge	33.0	11.55
	Reading	26.4	9.37
	Spelling	25.6	11.36
	Math. Computation	24.2	7.40
	Math. Concepts	23.8	8.07
	Intermediate (Grade 5.1)		
	Word Knowledge	26.0	10.09
	Reading	22.5	9.73
	Spelling	22.8	9.12
	Math. Computation	17.1	6.69
	Math. Concepts	18.3	7.60
	Science	38.1	15.13
	Social Studies	42.4	17.22
	Intermediate (Grade 6.1)		
	Word Knowledge	30.8	10.37
	Reading	26.2	10.46
	Spelling	28.6	9.83
	Math. Computation	23.3	7.83
	Math. Concepts	22.7	8.11
	Science	49.6	15.70
	Social Studies	54.1	19.12

Metropolitan Achievement Tests

Reliability: Primary 1 Battery (Last half of Grade 1)

Test:	Range	Mdn.
Word Knowledge	.86-.91	.90
Word Discrimination	.81-.83	.87
Reading	.88-.94	.92
Arithmetic		
Concepts (items 1-39)	.81-.89	.85
Skills (items 40-63)	.94-.95	.95
Total (items 1-63)	.91-.95	.93

Primary II Battery (Grade 2)

Test:	Range	Mdn.
Word Knowledge	.86-.96	.93
Word Discrimination	.86-.92	.88
Reading	.94-.95	.94
Spelling	.92-.95	.93
Arithmetic:		
Part A Concepts & Problem	.80-.87	.86
Solving	.74-.88	.80
Part B Computation	.85-.92	.91
Total (Parts A & B)		

Metropolitan Achievement Tests

Reliability:

Elementary Battery (Grades 3-4)

Test:	Range	Mdn.
Word Knowledge	.79-.95	.93
Word Discrimination	.88-.93	.92
Reading	.86-.91	.90
Spelling	.94-.96	.95
Language:		
Part A Usage	.74-.84	.80
Part B Punctuation & Capitalization	.61-.81	.78
Total (Parts A & B)	.79-.87	.84
Arith. Computation	.91-.93	.92
Arith. Problem Solving & Concepts	.86-.91	.88

Intermediate Battery (Grades 5-6)

Test:	Range	Mdn.
Word Knowledge	.88-.95	.94
Reading	.89-.92	.90
Spelling	.91-.96	.92
Language:		
Part A Usage	.78-.84	.81
Part B Parts of Speech	.64-.77	.72
Part C Punctuation & Capitalization	.80-.88	.83
Total (Parts A-C)	.87-.91	.89
Language Study Skills	.76-.85	.79
Arith. Computation	.82-.94	.88
Arith. Problem Solving & Concepts	.90-.95	.92
Social Studies Information	.86-.87	.87
Social Studies Study Skills	.64-.77	.73
Science	.87-.90	.89

Advanced Battery (Grades 7-9)

Test:	Range
Word Knowledge	.91-.94
Reading	.88-.92
Spelling	.90-.93
Language:	
Part A Usage	.47-.81
Part B Punctuation & Capitalization	.63-.77
Part C Kinds of Sentences	.53-.67
Part D Parts of Speech	.81-.86
Total (Parts A-D)	.88-.90
Language Study Skills	.79-.84
Arith. Computation	.87-.95
Arith. Problem Solving & Concepts	.89-.94
Social Studies Information	.86-.91
Social Studies Study Skills	.82-.86
Science	.79-.88

Metropolitan Achievement Tests

Validity:	Content & Construct	Concurrent & Predictive
	Generally Very Good	Not Reported

Metropolitan Achievement Tests (Critiques)

See Also:

Eagle, N. and Harris, A.S. "Interaction of Race and Test on Reading Performance Scores." *Journal of Educational Measurement*, 1966, 6(3), 131-135.

Otis-Lennon Mental Ability Test (2 Forms)

Purpose: To provide comprehensive, carefully articulated assessment of general mental ability, or scholastic aptitude of pupils in American schools.

Type of Test: Group intelligence

Range: Grades K-12

Time for Administration: 20-40 minutes

Cost: $5.50-$6.80 per 35 tests

Subtests: None

Levels: Primary I--last half of kindergarten
Primary II--first half of first grade
Elementary I--grades 1.5-3.9
Elementary II--grades 4-6
Intermediate--grades 7-9
Advanced--grades 10-12

Scores: Single deviation IQ
Mean = 100 Standard Deviation = 15

Nature of Test:

Emphasis is placed upon measuring the pupil's facility in reasoning and in dealing abstractly with verbal, symbolic, and figural content sampling a broad range of cognitive abilities. The new Otis-Lennon tests, like the previous editions in the Otis series, were constructed to yield dependable measurements of the "g" or general intellective ability factor. Thus, the single total score obtained at a given level summarizes the pupil's performance on a wide variety of test materials selected for their contribution to the assessment of this general ability factor.

Primary I Level: Test items of the pictorial type sample the mental processes of classification (education of relations), following of directions, quantitative reasoning, and comprehension of verbal concepts. The total score summarizes performance on the 55 items comprising the test. Each item in the test is presented orally by the examiner. This control ensures greater uniformity of test administration with children of this age and developmental level. No reading is required.

Primary II Level: Content of this level is identical to that contained in the Primary I Level.

Elementary I Level: Test items of the pictorial type sample the mental processes of classification (education of relations), following of directions, quantitative reasoning, comprehension of verbal concepts, and reasoning by analogy. The total score summarizes performance on the 80 items comprising the test. No reading is required.

Elementary II Level, Intermediate Level, and Advanced Level: The designated grade ranges for these levels should be used only as a general guide in the selection of a given level for use with a specific group of pupils. This flexibility in the use of the Otis-Lennon tests ensures more efficient measurement within groups of pupils displaying different developmental characteristics.

The test at each of these three levels is comprised of 80 items arranged in spiral omnibus form. A single total score summarizes performance on the particular test. Various types of verbal and non-verbal items sample a wide variety of mental processes. Emphasis is placed upon the measurement of abstract reasoning ability.

Otis-Lennon Mental Ability Test

Level	Grade	Mean (Raw Score)
Primary I	K	
Primary II	1	35.11
Elementary I	2	37.41
Elmentary I	3	45.75
Elementary II	4	34.05
Elementary II	5	43.72
Elementary II	6	52.21
Intermediate	7	37.46
Intermediate	8	43.70
Intermediate	9	49.22
Advanced	10	40.01
Advanced	11	43.55
Advanced	12	47.43

Otis-Lennon Mental Ability Test

			Validity	
Level	Grade	Reliability Split-Half	Content & Construct	Concurrent & Predictive
Primary I	K	.80-.90	Good	Poor
Primary II	1	.90	Good	Excellent
Elementary I	2	.89		
Elementary II	3	.92	Very Good	Excellent
Elementary II	4	.94		
Elementary II	5	.95	Very Good	Excellent
Elementary II	6	.95	Very Good	Excellent
Intermediate	7	.95		
Intermediate	8	.95		
Intermediate	9	.95		
Advanced	10	.95		
Advanced	11	.95		
Advanced	12	.96		

Otis-Lennon Mental Ability Test (Critiques)

See Also:

Grotelveschen, A. "Otis-Lennon Mental Ability Test." *Journal of Educational Measurement*, 1969, 6(2), 111-113.

Smith, A.E. "Otis-Lennon Mental Ability Test." *Journal of Counselin Psychology*, 1970, 17(1), 91-92.

PRELIMINARY SAT & CTMM MEANS FOR ELEMENTARY SCHOOLS-FEASIBILITY COMMITTEE

SCHOOL: L.J. Horner (1)

TEST NAME	GRADE						
	K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		14.3	15.0	22.0	17.4	19.7	25.5
Paragraph Meaning		11.9	25.3	37.1	28.3	29.3	35.6
Spelling		6.7	9.6	16.3	25.9	23.9	29.7
Arithmetic Computation		----	15.9	30.2	16.9	14.2	19.6
Arithmetic Concepts		27.5	15.2	24.5	15.1	10.7	15.1
Science					28.7	27.3	32.6
Social Studies					23.8	35.1	41.7
CTMM: Verbal	97.1	98.2	99.1	97.5	96.9	97.4	96.6
CTMM: Non-Verbal	96.3	97.3	96.1	97.2	96.5	98.5	97.8

California Test of Mental Maturity (CTMM)

Verbal
Non-Verbal

SCHOOL: P.P. Pumpkineater (-.2)

TEST NAME	GRADE						
	K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		13.7	13.9	21.7	18.3	19.4	25.3
Paragraph Meaning		12.4	24.3	38.3	27.1	28.7	35.2
Spelling		6.5	9.7	17.4	25.7	25.3	31.7
Arithmetic Computation		----	16.5	31.0	18.4	14.0	21.6
Arithmetic Concepts		26.1	14.8	24.9	13.4	10.6	14.9
Science					29.5	27.1	33.7
Social Studies					23.3	35.5	42.6
CTMM: Verbal	96.2	97.3	96.5	97.5	98.0	97.6	96.8
CTMM: Non-Verbal	97.4	98.1	97.8	96.5	97.7	96.9	97.2

SCHOOL: Knaveofhearts (-.2)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		13.9	14.8	21.6	18.4	20.1	26.0
Paragraph Meaning		12.4	25.9	38.4	29.3	30.7	36.1
Spelling		6.7	9.7	17.0	26.7	25.0	31.8
Arithmetic Computation		----	18.2	31.1	16.9	14.2	19.7
Arithmetic Concepts		27.8	15.9	25.2	13.7	12.1	16.7
Science					29.0	27.9	34.2
Social Studies					24.5	35.8	42.0
CTMM: Verbal	97.6	96.9	98.2	97.5	97.4	97.7	97.0
CTMM: Non-Verbal	98.1	97.2	97.1	96.8	98.0	96.7	97.8

SCHOOL: Jackandjill (-.2)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		13.7	15.1	21.9	17.8	21.6	25.9
Paragraph Meaning		13.0	25.4	37.8	29.1	29.7	35.9
Spelling		6.8	9.2	16.2	26.7	23.9	31.6
Arithmetic Computation		----	17.1	31.7	16.5	14.2	21.1
Arithmetic Concepts		27.6	15.9	25.6	13.9	10.9	16.2
Science					29.6	27.8	32.5
Social Studies					24.0	35.6	41.9
CTMM: Verbal	96.9	97.2	98.1	97.4	96.7	97.6	97.8
CTMM: Non-Verbal							

SCHOOL: H.D. Dock (-.2)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		13.8	15.0	21.8	16.9	21.1	25.1
Paragraph Meaning		12.2	25.1	38.1	28.1	28.4	36.6
Spelling		6.3	9.8	17.3	25.8	24.3	31.2
Arithmetic Computation		----	16.9	31.5	17.4	14.2	21.3
Arithmetic Concepts		27.1	14.9	24.2	13.8	10.9	14.9
Science					27.9	27.6	32.4
Social Studies					23.8	35.0	41.7
CTMM: Verbal	96.2	97.0	97.1	97.3	98.0	99.0	95.9
CTMM: Non-Verbal	97.3	98.1	97.5	97.3	96.9	97.3	98.0

SCHOOL: M. Goose (-.5)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		12.6	12.4	19.8	15.0	17.5	23.2
Paragraph Meaning		11.1	21.7	34.2	25.2	25.3	31.9
Spelling		4.5	6.9	14.7	23.1	21.2	27.5
Arithmetic Computation		----	14.7	28.1	14.9	12.4	18.0
Arithmetic Concepts		22.9	13.3	22.2	11.8	9.6	13.7
Science					24.9	24.9	30.6
Social Studies					22.1	31.4	37.8
CTMM: Verbal	91.0	92.7	91.8	93.3	92.8	91.9	92.5
CTMM: NON-Verbal	92.5	91.9	92.0	92.5	93.1	93.7	92.6

SCHOOL: **Lamb** (-.5)

TEST NAME	GRADE						
	K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		11.9	13.3	21.7	16.0	18.0	23.2
Paragraph Meaning		10.7	21.7	35.1	25.2	26.2	32.5
Spelling		4.2	7.6	14.5	23.4	22.3	27.6
Arithmetic Computation		----	13.9	26.9	15.8	11.9	17.9
Arithmetic Concepts		22.1	14.2	21.8	12.7	9.6	13.7
Science					25.3	24.9	29.9
Social Studies					22.1	31.7	38.2
CTMM: Verbal	91.9	92.7	92.4	92.6	93.1	92.5	91.7
CTMM: Non-Verbal	92.5	93.0	91.8	92.8	92.7	92.3	92.4

SCHOOL: **L.M. Muffet** (-.5)

TEST NAME	GRADE						
	K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		12.4	13.1	19.9	14.9	18.0	23.1
Paragraph Meaning		10.5	22.2	34.5	25.4	25.6	32.5
Spelling		4.7	6.9	14.6	23.1	22.1	27.8
Arithmetic Computation		----	13.8	28.2	16.0	12.4	17.9
Arithmetic Concepts		22.9	13.7	22.1	12.4	9.7	13.7
Science					25.6	24.9	31.0
Social Studies					21.9	30.8	37.7
CTMM: Verbal	92.1	93.1	92.5	90.9	94.0	92.6	92.5
CTMM: Non-Verbal	92.0	91.9	93.2	92.5	93.7	91.4	92.7

SCHOOL: J. Sprat (1.0)

TEST NAME	GRADE						
	K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		23.0	22.3	30.2	26.9	31.1	36.8
Paragraph Meaning		21.1	40.4	51.4	41.8	43.7	50.3
Spelling		13.7	18.1	26.1	40.0	36.9	44.4
Arithmetic Computation		----	26.8	41.7	26.2	20.0	28.9
Arithmetic Concepts		44.8	24.4	36.2	22.3	17.2	23.6
Science					42.3	39.5	44.7
Social Studies					34.1	49.1	57.0
CTMM: Verbal	115.9	114.3	115.0	117.4	115.9	117.3	115.4
CTMM: Non-Verbal	110.2	117.5	116.2	116.7	112.9	116.1	115.5

SCHOOL: Calicocat (0)

TEST NAME	GRADE						
	K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		15.9	15.8	23.1	19.0	21.4	27.8
Paragraph Meaning		14.2	29.2	39.8	31.1	32.6	39.1
Spelling		7.3	9.7	18.2	28.4	26.7	32.8
Arithmetic Computation		----	18.2	32.3	19.7	14.5	21.4
Arithmetic Concepts		31.1	16.8	27.1	15.5	12.7	16.9
Science					30.8	29.6	35.6
Social Studies					26.2	37.4	45.7
CTMM: Verbal	98.1						
CTMM: Non-Verbal							

SCHOOL: **T. Blindmice** (0)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		15.8	16.5	23.1	19.0	21.7	27.7
Paragraph Meaning		13.7	29.2	40.3	30.5	32.0	38.6
Spelling		6.4	10.6	18.7	27.9	27.2	32.8
Arithmetic Computation			17.9	31.8	19.6	14.9	21.8
Arithmetic Concepts		31.0	17.5	26.3	15.2	11.4	16.4
Science					30.7	29.7	34.6
Social Studies					26.1	36.9	44.2
CTMM: Verbal	99.1	97.3	100.7	98.9	100.3	99.6	100.8
CTMM: Non-Verbal	100.5	98.1	99.7	101.2	99.4	100.2	100.1

SCHOOL: **H.D. Diddle** (0)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		15.8	16.6	23.7	18.7	21.9	27.9
Paragraph Meaning		14.4	27.8	39.8	31.0	32.2	38.7
Spelling		7.6	11.1	18.6	28.8	27.0	32.8
Arithmetic Computation			18.7	32.7	18.9	15.1	22.2
Arithmetic Concepts		31.2	16.9	26.8	15.7	11.6	17.1
Science					30.5	30.5	35.6
Social Studies					26.2	36.9	43.9
CTMM: Verbal	100.6	101.1	99.2	100.5	98.9	101.6	98.2
CTMM: Non-Verbal	100.2	99.7	98.8	99.5	100.7	100.2	99.7

SCHOOL: O.K. Cole (-.2)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		15.2	14.9	21.9	17.8	21.1	25.6
Paragraph Meaning		13.1	25.7	37.9	28.7	29.7	36.0
Spelling		6.7	10.1	17.0	26.9	25.2	31.3
Arithmetic Computation			17.2	29.6	18.1	14.2	20.7
Arithmetic Concepts		27.8	16.1	25.1	13.9	10.9	15.6
Science					29.0	27.8	32.8
Social Studies					23.8	34.7	41.9
CTMM: Verbal	97.1	96.7	96.8	97.7	97.0	96.9	99.2
CTMM: Non-Verbal	98.2	97.7	98.0	98.7	97.2	97.1	96.5

SCHOOL: Shaftoe (0)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		16.2	15.7	23.6	18.8	22.4	27.8
Paragraph Meaning		13.9	28.3	39.8	31.1	32.1	39.1
Spelling		7.6	11.1	18.7	28.4	26.9	32.7
Arithmetic Computation			18.7	32.8	19.7	14.7	22.3
Arithmetic Concepts		29.9	17.5	26.9	15.6	11.8	17.4
Science					31.7	29.7	34.8
Social Studies					25.0	38.1	44.9
CTMM: Verbal	100.7	102.0	100.6	99.2	101.1	98.6	101.8
CTMM: Non-Verbal	101.2	100.5	99.7	100.5	99.7	100.6	100.2

SCHOOL: M.M. Contrary (.5)

TEST NAME	GRADE						
	K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		19.5	19.1	26.8	22.9	26.6	32.2
Paragraph Meaning		17.6	34.2	45.7	36.2	37.6	44.3
Spelling		10.7	14.5	22.2	34.2	31.8	38.7
Arithmetic Computation			22.2	37.0	22.7	17.3	25.3
Arithmetic Concepts		37.6	20.9	31.3	18.8	14.6	20.2
Science					36.6	34.7	39.8
Social Studies					29.9	43.1	50.8
CTMM: Verbal	107.5	108.1	110.3	107.9	106.9	107.7	108.6
CTMM: Non-Verbal	106.9	107.2	109.1	108.2	107.3	105.5	107.8

SCHOOL: Inashoe (0)

TEST NAME	GRADE						
	K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		16.4	15.7	24.2	18.6	21.9	27.9
Paragraph Meaning		14.2	28.2	39.7	30.2	32.0	38.0
Spelling		7.8	10.9	18.3	28.9	26.7	32.6
Arithmetic Computation			18.8	32.0	18.8	14.6	22.3
Arithmetic Concepts		31.1	16.1	26.9	15.7	11.9	17.1
Science					30.8	29.7	34.6
Social Studies					26.1	36.8	45.2
CTMM: Verbal	100.6	97.8	100.6	99.7	99.9	101.2	98.9
CTMM: Non-Verbal	98.9	99.4	100.4	100.2	100.7	100.8	102.3

SCHOOL: S. Simon (-.5)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		12.6	12.8	20.1	15.0	17.9	22.9
Paragraph Meaning		10.5	21.9	34.4	24.9	25.7	32.4
Spelling		4.6	7.2	14.5	22.9	21.7	27.4
Arithmetic Computation			14.2	27.7	15.6	12.2	18.1
Arithmetic Concepts		23.1	13.4	21.8	11.9	9.5	13.4
Science					25.5	25.2	30.1
Social Sciences					21.6	31.4	38.4
CTMM: Verbal	92.4	93.7	94.0	91.2	93.1	91.9	93.2
CTMM: Non-Verbal	91.6	92.5	92.7	92.9	94.2	92.8	92.5

SCHOOL: Hubbard (-.2)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		14.7	14.7	22.2	17.4	20.5	27.7
Paragraph Meaning		12.7	25.6	37.8	28.4	29.3	36.1
Spelling		6.5	9.7	16.9	26.3	24.8	30.1
Arithmetic Computation			16.7	30.5	17.8	13.8	20.3
Arithmetic Concepts		27.5	15.7	24.7	14.0	11.1	15.4
Science					28.9	28.1	33.0
Social Studies					24.1	34.9	42.1
CTMM: Verbal	97.0	98.2	97.2	98.1	97.9	98.4	98.0
CTMM: Non-Verbal	96.9	97.8	96.0	97.7	97.3	96.1	96.5

SCHOOL: **Sixpence** (-.9)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		9.6	10.5	17.6	12.1	14.7	18.7
Paragraph Meaning		7.4	16.7	30.1	20.7	21.3	27.3
Spelling		2.8	4.3	11.7	18.2	17.9	23.2
Arithmetic Computation			10.7	23.8	13.0	9.8	14.9
Arithmetic Concepts		17.1	10.9	18.1	8.7	7.4	10.7
Science					20.8	21.7	25.8
Social Studies					18.2	26.8	33.7
CTMM: Verbal	86.4	88.1	87.2	84.3	86.8	87.2	85.9
CTMM: Non-Verbal	87.3	85.0	86.7	85.9	87.0	16.4	86.7

SCHOOL: **B.B.B. Sheep** (-.9)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		9.9	10.3	17.4	11.8	14.4	19.2
Paragraph Meaning		7.7	16.9	29.9	20.5	20.9	27.6
Spelling		2.2	4.3	11.4	18.3	17.6	22.9
Arithmetic Computation			10.8	24.0	12.8	10.1	15.2
Arithmetic Concepts		17.4	10.5	17.9	9.2	7.4	10.6
Science					21.0	21.4	26.0
Social Studies					18.3	26.6	33.4
CTMM: Verbal	86.2	85.9	88.1	86.9	87.1	86.9	87.0
CTMM: Non-Verbal	87.1	86.7	87.2	87.3	86.5	88.1	86.8

SCHOOL: L.B. BLUE (-.2)

TEST NAME	GRADE K	1	2	3	4	5	6
STANFORD ACHIEVEMENT TESTS (SAT)							
Word Meaning		14.7	14.7	22.1	17.4	20.5	25.7
Paragraph Meaning		11.9	24.6	36.8	27.3	28.3	25.0
Spelling		6.4	9.4	16.8	26.3	24.7	30.8
Arithmetic Computation			15.7	29.5	16.7	12.7	19.2
Arithmetic Concepts		26.5	15.7	24.6	14.0	11.0	15.4
Science					27.8	27.1	32.0
Social Studies					24.1	34.9	42.2
CTMM: Verbal	96.9	98.1	97.7	100.0	96.2	95.4	97.0
CTMM: Non-Verbal	97.2	97.0	96.9	97.7	98.1	96.9	97.1

Stanford Achievement Tests

(3 Forms)

Purpose: To test the educational achievements that are commonly expected of students in a modern comprehensive school

Type of Test: Individual or group achievement

Range: Grades 1-12

Time for Administration: Varies from 127-440 minutes (4-7 sessions)

Cost: $5.65-$9.75 per 35 tests, $.60-$1.60 per set of keys

Subtests: Primary I Battery (Grades 1.5-2.5)

- Word Reading (Word Meaning)
- Paragraph Meaning
- Vocabulary
- Spelling
- Word Study Skills
- Arithmetic (Concepts)

Primary II Battery (Grades 2.5-3.9)

- Word Meaning
- Paragraph Meaning
- Science & Social Studies Concepts
- Arithmetic Concepts
- Spelling
- Word Study Skills
- Language
- Arithmetic Computation

Intermediate I Battery (Grades 4.0-5.5)

- Word Meaning
- Paragraph Meaning
- Spelling
- Word Study Skills
- Language
- Social Studies
- Arithmetic Computation
- Arithmetic Concepts
- Arithmetic Applications
- Science

Intermediate II Battery (Grades 5.5-6.9)

- Word Meaning
- Paragraph Meaning
- Spelling
- Language
- Science
- Arithmetic Computation
- Arithmetic Concepts
- Arithmetic Applications
- Social Studies

Advanced Battery (Grades 7.0-9.9)

- Paragraph Meaning
- Spelling
- Language
- Arithmetic Computation
- Arithmetic Concepts
- Arithmetic Applications
- Social Studies
- Science

High School Battery (Grades 9-12)

- Reading
- Spelling
- English
- Numerical Competence
- Science
- Mathematics
- Social Studies
- Arts & Humanities
- Business & Economics
- Technical Comprehension

Scores: Raw; for each subtest

Stanford Achievement Tests

Subtest:	Word Reading	Grade 1	Means 16.1	S.D. 6.88
	Paragraph Meaning	Grade 1	Means 14.1	S.D. 7.05
	Vocabulary	Grade 1	Means 18.8	S.D. 6.69
	Spelling	Grade 1	Means 7.7	S.D. 6.05
	Word Study Skills	Grade 1	Means 31.7	S.D. 9.47
	Arithmetic	Grade 1	Means 30.4	S.D. 14.43
Subtest:	Word Meaning	Grade 2	Means 16.0	S.D. 6.3
	Paragraph Meaning	Grade 2	Means 28.1	S.D. 12.35
	Sci. & Social Studies Concepts	Grade 2	Means 17.6	S.D. 4.97
	Spelling	Grade 2	Means 10.9	S.D. 7.24
	Word Study Skills	Grade 2	Means 34.5	S.D. 12.90
	Language	Grade 2	Means 35.3	S.D. 9.72
	Arith. Computation	Grade 2	Means 18.4	S.D. 8.38
	Arith. Concepts	Grade 2	Means 17.2	S.D. 7.42
Subtest:	Word Meaning	Grade 3	Means 23.5	S.D. 6.68
	Paragraph Meaning	Grade 3	Means 40.1	S.D. 11.33
	Sci. & Social Studies Concepts	Grade 3	Means 22.1	S.D. 5.70
	Spelling	Grade 3	Means 18.4	S.D. 7.73
	Word Study Skills	Grade 3	Means 42.1	S.D. 13.23
	Language	Grade 3	Means 46.4	S.D. 11.40
	Arith. Computation	Grade 3	Means 32.4	S.D. 9.30
	Arith. Concepts	Grade 3	Means 26.6	S.D. 9.58
Subtest:	Word Meaning	Grade 4	Means 19.0	S.D. 7.94
	Paragraph Meaning	Grade 4	Means 30.6	S.D. 11.22
	Spelling	Grade 4	Means 28.6	S.D. 11.37
	Word Study Skills	Grade 4	Means 37.9	S.D. 12.92
	Language	Grade 4	Means 73.6	S.D. 17.15
	Arith. Computation	Grade 4	Means 19.2	S.D. 7.07
	Arith. Concepts	Grade 4	Means 15.4	S.D. 6.86
	Arith. Applications	Grade 4	Means 16.0	S.D. 6.46
	Social Studies	Grade 4	Means 25.8	S.D. 8.28
	Science	Grade 4	Means 31.1	S.D. 11.16
Subtest:	Word Meaning	Grade 5	Means 22.3	S.D. 8.76
	Paragraph Meaning	Grade 5	Means 31.7	S.D. 11.96
	Spelling	Grade 5	Means 26.8	S.D. 10.14
	Language	Grade 5	Means 81.2	S.D. 18.72
	Arith. Computation	Grade 5	Means 14.8	S.D. 5.18
	Arith. Concepts	Grade 5	Means 12.1	S.D. 5.15
	Arith. Applications	Grade 5	Means 16.6	S.D. 6.05
	Social Studies	Grade 5	Means 37.3	S.D. 11.79
	Science	Grade 5	Means 30.0	S.D. 9.53

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Stanford Achievement Tests

Subtest:	Word Meaning	Grade 6	Means 27.6	S.D. 9.25
	Paragraph Meaning	Grade 6	Means 38.4	S.D. 11.94
	Spelling	Grade 6	Means 33.1	S.D. 11.26
	Language	Grade 6	Means 90.5	S.D. 18.88
	Arith. Computation	Grade 6	Means 21.7	S.D. 7.21
	Arith. Concepts	Grade 6	Means 16.8	S.D. 6.80
	Arith. Applications	Grade 6	Means 21.5	S.D. 7.83
	Social Studies	Grade 6	Means 44.6	S.D. 12.41
	Science	Grade 6	Means 35.0	S.D. 9.69
Subtest:	Paragraph Meaning	Grade 7	Means 31.0	S.D. 11.86
	Spelling	Grade 7	Means 26.4	S.D. 10.88
	Language	Grade 7	Means 92.5	S.D. 17.71
	Arith. Computation	Grade 7	Means 19.2	S.D. 7.28
	Arith. Concepts	Grade 7	Means 16.5	S.D. 6.47
	Arith. Applications	Grade 7	Means 13.7	S.D. 5.14
	Social Studies	Grade 7	Means 44.9	S.D. 13.15
	Science	Grade 7	Means 32.2	S.D. 9.82
Subtest:	Paragraph Meaning	Grade 8	Means 35.6	S.D. 11.95
	Spelling	Grade 8	Means 31.0	S.D. 12.23
	Language	Grade 8	Means 98.0	S.D. 17.70
	Arith. Computation	Grade 8	Means 23.5	S.D. 8.35
	Arith. Concepts	Grade 8	Means 20.4	S.D. 7.58
	Arith. Applications	Grade 8	Means 16.4	S.D. 5.76
	Social Studies	Grade 8	Means 50.3	S.D. 13.52
	Science	Grade 8	Means 35.6	S.D. 10.09
Subtest:	Paragraph Meaning	Grade 9	Means 38.0	S.D. 12.25
	Spelling	Grade 9	Means 32.9	S.D. 12.50
	Language	Grade 9	Means 101.5	S.D. 18.12
	Arith. Computation	Grade 9	Means 25.8	S.D. 8.84
	Arith. Concepts	Grade 9	Means 22.7	S.D. 8.21
	Arith. Applications	Grade 9	Means 17.5	S.D. 5.68
	Social Studies	Grade 9	Means 52.6	S.D. 13.60
	Science	Grade 9	Means 38.0	S.D. 9.98

Stanford Achievement Tests

Primary I Grade I	r_{11}
Word Reading	.85
Paragh. Meaning	.90
Vocabulary	.79
Spelling	.92
Word Study Skills	.88
Arithmetic	.95

Primary II Grade 2	r_{11}
Word Meaning	.85
Paragh. Meaning	.93
Sci. Soc. Studies Concepts	.66
Spelling	.94
Word Study Skills	.92
Language	.84
Arith. Comput.	.93
Arith. Concepts	.86

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Stanford Achievement Tests

Primary II Grade 3	r_{11}
Word Meaning	.87
Paragraph Meaning	.93
Sci. Soc. Studies Concepts	.79
Spelling	.94
Word Study Skills	.94
Language	.89
Arith. Comput.	.93
Arith. Concepts	.90

Intermediate I Grade 4	r_{11}
Word Meaning	.90
Paragraph Meaning	.92
Spelling	.93
Word Study Skills	.94
Language	.93
Arith. Comput.	.89
Arith. Concepts	.86
Arith. Applications	.86
Social Studies	.86
Science	.91

Intermediate II Grade 5	r_{11}
Word Meaning	.89
Paragraph Meaning	.93
Spelling	.91
Language	.93
Arith. Comput.	.83
Arith. Concepts	.77
Arith. Applications	.84
Social Studies	.89
Science	.88

Intermediate II Grade 6	r_{11}
Word Meaning	.90
Paragraph Meaning	.93
Spelling	.93
Language	.95
Arith. Comput.	.89
Arith. Concepts	.85
Arith. Applications	.89
Social Studies	.91
Science	.90

Advanced Grade 7	r_{11}
Paragraph Meaning	.93
Spelling	.91
Language	.94
Arith. Comput.	.87
Arith. Concepts	.82
Arith. Applications	.77
Social Studies	.89
Science	.88

Advanced Grade 8	r_{11}
Paragraph Meaning	.93
Spelling	.92
Language	.94
Arith. Comput.	.90
Arith. Concepts	.86
Arith. Applications	.81
Social Studies	.91
Science	.89

Advanced Grade 9	r_{11}
Paragraph Meaning	.94
Spelling	.94
Language	.94
Arith. Comput.	.92
Arith. Concepts	.87
Arith. Applications	.79
Social Studies	.90
Science	.90

Grade 9 (Reliability Coefficients)	r_{11}
English	.94
Numerical Competence	.90
Math - Part A	.84
Math - Total	.84
Reading	.90
Science - Part A	.87
Science - Total	.87
Social Studies	.85
Spelling	.89
Arts & Humanities	.91
Business & Economics	.88
Tech. Comprehension	.92

(Continued)

Stanford Achievement Tests (Reliability Coefficients)

Grade 10	r_a
English	.94
Numerical Competence	.90
Math - Part A	.89
Math - Total	.89
Reading	.91
Science - Part A	.88
Science - Total	.89
Social Studies	.85
Spelling	.90
Arts & Humanities	.92
Business & Economics	.88
Tech. Comprehension	.93

Grade 11	r_a
English	.94
Numerical Competence	.92
Math - Part A	.92
Math - Total	.93
Reading	.92
Science - Part A	.87
Science - Total	.89
Social Studies	.88
Spelling	.91
Arts & Humanities	.93
Business & Economics	.90
Tech. Comprehension	.94

Grade 12	r_a
English	.94
Numerical Competence	.92
Math - Part A	.92
Math - Total	.94
Reading	.91
Science - Part A	.87
Science - Total	.89
Social Studies	.88
Spelling	.92
Arts & Humanities	.93
Business & Economics	.90
Tech. Comprehension	.94

Stanford Achievement Tests

	Validity	
	Content & Construct	Concurrent & Predictive
Arith. Applications	Good	Good
Arith. Computation	Very Good	Good
Arith. Concepts	Very Good	Fair
Arith. Total	Good	Fair
Language	Very Good	Fair
Paragraph Meaning	Very Good	Fair
Vocabulary	Very Good	Poor
Word Meaning	Very Good	Fair
Science	Good	Good
Science & Social Studies		Good
Concepts		Poor
Social Studies	Good	Good
Spelling	Very Good	Fair
Word Study Skills	Very Good	Fair

Stanford Achievement Tests (Critiques)

See Also:

Olson, A.V. and Johnson, C.I. "Structure and Predictive Validity of the Frostig Developmental Test of Visual Perception in Grades One and Three." *The Journal of Special Education*, 1970, 4(1), 49-52.

Stake, R.E. and Hastings, J.T. "The Stanford Achievement Test Battery." *Personnel and Guidance Journal*, 1964, 43(10), 178-184.

Stanford-Binet Intelligence Scale (1 Form)

Purpose: To test mental ability

Type of Test: Individual intelligence

Range: Two years-Adult

Time for Administration: 60-90 minutes

Cost: $33.20 per set of test materials, $4.40 per 35 record booklets, $4.48 per manual

Subtests: None

Scores: Total IQ, scaled

Nature of Test:

This test differs according to age level. Many of the tests at the lower age levels are quite concrete, dealing with little objects and pictures. At the upper levels, the tests tend to be more abstract and quite heavily verbal. The various tests include tasks calling for display of past learnings, perception of relations, judgment, interpretation, sustained attention, immediate memory, and other cognitive processes.

In testing a child, the examiner begins at a level where the child is likely to succeed, but only with some effort. If the child fails these and appears discouraged, the examiner will drop back to an easier level. Otherwise, he will move ahead, level-by-level, until he reaches a level at which the child fails all tests. When the upper limit has been established, the examiner will go back and establish the level at which the child can do all the tasks.

Stanford-Binet Intelligence Scale (Standardization Sample Scores)

Age	Means	Standard Deviation
All	101.8	16.4

Reliability: .91
Validity: .82-.90

Stanford-Binet Intelligence Tests (Critiques)

See Also:

Churchhill, W.D. and Smith, S.E. "The Relationship of the 1960 Revised Stanford Binet Intelligence Scale to Intelligence and Achievement Test Scores Over a Three-Year Period." Educational and Psychological Measurement, 1966, 26(4), 1015-1020.

Deloria, D. The Stanford-Binet in the Ypsilanti Curriculum. Why?

Himelstein, P. "Research with the Stanford-Binet, Form L-M: The First Five Years." Psychological Bulletin, 1966, 65(3), 156-164.

Hirshoren, A. "A Comparison of the Predictive Validity of the Revised Stanford-Binet Intelligence Scale and the Illinois Test of Psycholinguistic Abilities," 1969, 35(3), 517-521.

Mueller, M.W. "Validity of Six Tests of Ability with Educable Mental Retardates." Journal of School Psychology, 1968, 6(2), 136-146.

Nelson, C.M. and Hudson, F.G. "Predicting the Reading Achievement of Junior High School EMR Children." American Journal of Mental Deficiency, 1969, 74(3), 415-420.

Scherer, I.W. "The Prediction of Academic Achievement in Brain-Injured Children." Exceptional Children, 1961, 103-107.

Anderson, H.E. and Leton, D.A. "Factor Analysis of the California Test of Mental Maturity." Educational and Psychological Measurements, 1964, 24(3), 513-523.

When the California Test of Mental Maturity (CTMM) was originally published in 1936, it was designed as a group intelligence test, to be the counterpart of the Stanford-Binet individual intelligence test. A short form of the test (CTMM-SF) was published in 1938; both forms were revised in 1963, but their purpose remained the same.

The original factor analysis of the CTMM was carried out in 1938 and the results were utilized in the organization of the subtests on later revisions of the test. The present article is concerned with the factor analytic studies conducted with the 1963 revision of the CTMM and CTMM-SF.

Five levels of the CTMM and CTMM-SF (which collectively span grades one through twelve) were analyzed separately, and means, standard deviations, and Kudar-Richardson reliability coefficients were computed for each of the subtests. The product-moment correlation for each pair of variables was determined and the centroid method was used to factor each of the ten intercorrelation matrices. The factor structures that resulted were rotated by the varimax method and additional necessary rotations and adjustments were made by hand using simple structure and positive manifold as criteria.

The factor analysis revealed three components for the short-form tests: Logical Reasoning, Numerical Reasoning, and Verbal/Memory. The long-form tests also included the Logical and Numerical Reasoning factors. However, three additional factors were determined: Spatial Relations, Memory, and Verbal Concepts. The results for Level 1 (grades one through three) differed somewhat from the others and seemed to indicate the presence of perceptual characteristics in the subtests.

Brim, O.B. "American Attitudes Toward Intelligence Tests." *American Psychologists*, *20*, 1965, 125-130.

This article is an outgrowth of a project under the Russell Sage Foundation which investigated the social consequences of administering standardized ability tests. The author elaborates the various objections which have been raised about testing. He divides the objections into two categories: superficial or apparent criticisms and basic sources of criticisms. The former criticisms are felt to be ones which could be almost alleviated with the proper controls and education. The latter kind of criticisms are harder to alleviate since these deal with more basic issues such as long-range self-esteem, and the issue of equality of all men. He concludes by saying: "Our review of these four fundamental sources of opposition to tests leads to the conclusion that psychologists must be concerned about the society in which tests are used. Testing does not occur in isolation; there is always a social context. Test scores have a social meaning. They have impact on man's self-esteem; they influence his life chances; they engage his deepest political and social attitudes. These forces must be understood as part of the social setting in which intelligence testing is carried on."

Churchill, W.D. and Smith, S.E. "The Relationship of the 1960 Revised Stanford-Binet Intelligence Scale to Intelligence and Achievement Test Scores Over a Three-Year Period." Educational and Psychological Measurement, 1966, 26(4), 1015-1020.

The primary objective of this study was to determine the relationship between the 1960 Stanford-Binet Intelligence Scale (S-B) and Lorge-Thorndike IQ's obtained three years later. A secondary objective was to determine the relationship between the 1960 S-B and achievement as measured by the Iowa Test of Basic Skills.

The subjects for the study were 56 members of a seventh grade class in a rural central school. These students had taken the 1960 S-B and the Iowa Test of Basic Skills (Form 2) in third grade, and the Lorge-Thorndike Intelligence Tests and Iowa Tests of Basic Skills (Form 1) in grade 6.

The authors concluded that:

1. The 1960 S-B is a valid measure of "scholastic ability;
2. Group mental tests and comprehensive achievement tests lead to the same prediction;
3. For this small sample, at least, the two IQ tests used could be considered interchangeable.

Deloria, Dennis. "The Stanford-Binet in the Ypsilanti Curriculum. Why?"
High Scope Educational Research Foundation.

The author evaluates the Stanford-Binet Intelligence Scale as he defends its use as the key instrument used to assess the affects of the Ypsilanti Cognitively-Oriented Follow Through Curriculum.

The following points are made:

1. The Stanford-Binet (S-B) exhibits high predictive validity for later success in school;
2. The S-B excells in reliability;
3. The S-B measures present ability, not inborn capacity;
4. Though the S-B was normed using middle class white persons, it does predict success in American schools as they currently exist better than any comparable test.
5. The cultural bias of the S-B can be diminished by considering change scores rather than absolute scores;
6. An intelligence test is really only a special kind of achievement test;
7. The variability of S-B scores remains essentially constant as children progress in age.

Grotelveschen, A. "Otis-Lennon Mental Ability Test." Journal of Educational Measurement, 1969, 6(2), 111-113.

The Otis-Lennon Mental Ability Test is a revision of the Otis Quick-Scoring Mental Ability Test. The Otis-Lennon Primary I, Primary II, and Elementary I levels are designed to replace the Quick-Scoring Alpha Test; the Elementary II and Intermediate levels are designed to replace the Beta test; and the Advanced level is designed to replace the Gamma test.

The reviewer finds much to commend in the test. The test booklets are well-organized and designed and the test itself is easily administered and scored. The manual contains an excellent discussion of the use of the age and grade norms and the interpretation of test scores. Substantial evidence is provided to indicate a high reliability for the test.

Some criticisms are offered. The distinctiveness of the Primary I level, intended as a downward extension of the Alpha test, is questioned by the reviewer. Since the items in the Primary I level are identical to those in the Primary II, the response mode is the only source of differentiation, and this the reviewer feels is not an adequate base for distinguishing between them. In addition, the technical data for the Primary I level are neither as complete nor acceptable as those provided for the other test levels. The reviewer also questioned the lack of data on validity.

In general, the reviewer concludes that the Otis-Lennon is an outstanding test of its kind.

Himelstein, P. "Research With the Stanford-Binet, Form L-M: The First Five Years." Psychological Bulletin, 1966, 65(3), 156-164.

This article reviews the first five years of research with the 1960 revision of the Stanford-Binet Intelligence Scale (1960-1965). The major areas considered by the reviewer are validity, reliability, sensitivity to extra-test influences, performance of southern Negro children, influence of socio-economic status, diagnostic value, and brief forms.

A major problem in the studies reviewed was the population used; frequently the sample was drawn from retarded or gifted children. This fact decreased the generalizability of the results.

Almost all of the validity studies were concerned with concurrent validity in which the Stanford-Binet was correlated with another test, often a test that just happened to be in the patient's file. The author reports correlations between the Stanford-Binet and the Wechsler Intelligence Scale for Children, the Wechsler Adult Intelligence Scale, the Draw-A-Man Test, the Peabody Picture Vocabulary Test, the Kuhlman Test of Mental Development, the Vineland Social Maturity Scale, the Gesell Developmental Schedule, the California Test of Mental Maturity, the Sequential Test of Educational Progress, the California Achievement Test, and teacher ratings.

The studies revealed little concern for the reliability of the test, the effects of various incentives, and the influence of situational variables, such as "warm" versus "cold" examiners.

In general, the use of the Stanford-Binet short form was found to slightly underestimate the full-scale score. The Stanford-Binet has not been widely employed as a diagnostic tool.

Hirshoren, A. "A Comparison of the Predictive Validity of the Revised Stanford-Binet Intelligence Scale and the Illinois Test of Psycholinguistic Abilities," *Exceptional Children*, 1969, 35(3), 517-521.

The Illinois Test of Psycholinguistic Ability (ITPA) was developed as a clinical diagnostic test to be used with young children for the identification of specific language disabilities.

The problem of the present study was to determine the predictive validity of the ITPA Total Language Score and of the subtest scores, as well as the predictive validity of the Revised Stanford-Binet IQ, all obtained at the beginning of kindergarten, for school achievement at the beginning of the second grade. For the study, 40 Caucasion children from a heterogeneous neighborhood were tested with the ITPA, the 1960 revision of the Stanford-Binet, and the California Achievement Test (CAT), Lower Primary Form.

The results indicate that the Total Language Score of the ITPA, at least at the kindergarten level, is as valid a predictor as is the Stanford-Binet IQ for school achievement two years later. Performance on the ITPA subtests at the automatic-sequential level is significantly related to performance on all seven of the achievement variables from the CAT. At the representational level of the ITPA, the various subtests are significantly related to various of the CAT subtests. Using stepwise multiple correlation with the ITPA subtests increases the predictive validity of the ITPA. Including the Stanford-Binet IQ as a predictor variable does not improve upon the predictions of future achievement obtained by using the ITPA subtests alone. The ITPA has the added advantage of noting specific areas of language deficits so that remedial programs for individual children may be developed.

Johnson, G.B. "Factors to be Considered in the Interpretation of Intelligence-Test Scores." The Elementary School Journal, 1953, 1-8.

"There are three sources of potential error to be considered in the interpretation of an intelligence quotient. These are to be found in external factors, which relate to the test itself; in internal factors, which include organic and emotional aspects of the individual being tested; and in factors which may be both external and internal and which include the effect of the individual's environment in general." From the detailed analysis of these sources of error, the author concludes:

"1. Select the tests which most nearly suit your purpose in testing. To make the selection requires a knowledge of individual, group, verbal and performance tests and their statistical foundations.

2. Select the tests which have been demonstrated to be both valid and reliable in testing situations similar to your own. This requires a knowledge of the individual and group differences in your situation. Even then, do not put too much credence in the results of one test.

3. If you use standard norms, realize their limitations. If you find them inadequate, prepare local norms.

4. Whichever test you choose, follow closely the directions for administering it. Practice on yourself often before actually administering it.

5. If the test is not machine scored, score it yourself twice.

6. Administer the test under optimum physical and psychological conditions.

7. With both individual and group tests, observe the pupils for factors which may be significant to efficiency of performance, hence to score interpretation.

8. Condition the testees for, not against, intelligence tests. An initial approach in this direction should be to provide pre-service and in-service training for teachers.

9. Understand that intelligence is a composite of factors, in some of which one person may be relatively strong and others relatively weak.

10. Realize that, even with all these precautions, the intelligence test is still in an early phase of development and that the intelligence quotient cannot be considered as precise, as consistent or as true a value as in a unit of measure from the thermometer or the weighing scale."

Knief, L.M. and Stroud, J.B. "Intercorrelations Among Various Intelligence, Achievement and Social Class Scores." Journal of Educational Psychology, 1959, 50(3), 117-120.

In order to obtain information on the relationship of social class to intelligence and achievement test scores, a group of fourth grade students in a Midwestern community were tested over a period of several months. The tests administered were (1) Lorge-Thorndike Intelligence Tests, Verbal; (2) Lorge-Thorndike Intelligence Tests, Nonverbal (Level 3 in both cases); (3) Davis-Eells Games (Elementary Level); (4) Raven's Progressive Matrices; (5) Iowa Test of Basic Skills; and (6) the Warner Index of Status Characteristics.

The following intercorrelations were reported:

Variable	1	2	3	4	5	6
1		.309	.304	.323	.179	.340
2			.571	.645	.405	.568
3				.709	.437	.839
4					.521	.683
5						.450
6						

The authors concluded that their study gave little justification for the use of the Davis-Eells games, Lorge-Thorndike Non-Verbal test, and the Progressive Matrices in conjunction with the Lorge-Thorndike Verbal test for general prediction purposes. However, this information does not negate their usefulness in individual diagnosis.

Smith, A.E. "Otis-Lennon Mental Ability Test," Journal of Counseling Psychology, 1970, 17(1), 91-92.

The series comprising the new Otis-Lennon Mental Ability Test provides for consistent testing of intelligence in grades K-12. The purpose of the series is "to provide comprehensive, carefully articulated assessment of the general mental ability, or scholastic aptitude." A single score reflecting the student's ability to reason with verbal and symbolic content is obtained. No claim is made for measuring innate intelligence. The items resemble the tasks required of students in the schools of this country and assume that "all pupils have had substantially equal opportunity to learn the types of things included in the test," and all are equally motivated. If the students do poorly on the test they will have difficulty in school and probably for the same reasons. The tests attempt to predict academic success and hence sample broadly from academic material. They attempt to measure "learned or developed abilities in the broadest sense."

No reading is required in the first three levels and there is a smaller percentage of verbal items than previously in the upper level tests. Such care taken to reduce the effects of reading handicaps on the student's performance is commendable.

The reviewer has some questions about the distinction between the Primary I and Primary II levels. He also suggests further research on the stability and power of the tests since the initial studies were conducted with somewhat above average students.